American FRUIT GROWER

JULY 1946

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DIRECTORY ISSUE

MORE FORD TRUCKS *On the Farm!*

—because A FORD TRUCK GIVES YOU MORE TRUCK FOR ANY FARM JOB!

RELIABILITY! When delay might mean losing a crop or valuable stock, can you think of any other equipment you'd rather trust than a Ford Truck?

ECONOMY! Fathers and grandfathers of today's young farm men can tell you Ford has furnished foremost *economy transportation* for nearly fifty years.

CONVENIENCE! Wherever you are—wherever you go—you'll find Genuine Ford Parts and Service to keep your Ford Truck on the job.

ENDURANCE! Check the Ford Truck against others—for strength, quality of materials, good design, precision work. Real ruggedness is built into every part of every Ford Truck.

PERFORMANCE! No other truck gives you the performance of the famous 100 H.P. Ford V-8 engine! It's a natural for off-the-road farm service, where the weather can make any job a heavy-duty job! And there's a great 90 H.P. Ford Six that gives you a real pull at low speed, real economy on the job.

Reliability! Economy! Convenience! Endurance! Performance! Those are values engineered into Ford Trucks to save you money and to serve you better.

A new Ford rod bearing material—Silvaloy—far outlasts any other in Ford history. New 4-ring aluminum alloy pistons cut oil and fuel consumption. New sealed-dry distributor protects ignition for surest starting. Valve springs are tougher and won't rust, clutch is easier to service, cylinder heads are interchangeable, cooling system is pressure sealed against loss of water and anti-freeze. Carburetion is balanced to compensate for varying restrictions in the air cleaner, thus increasing efficiency and economy. Cartridge-type oil filter and oil-bath air cleaner trap harmful grit, prolonging engine life.

Other new features will increase your comfort, save you money, make your Ford Truck still more reliable, more rugged, longer lasting. The popular 49 x 78¾-inch pickup, as well as 6½-ft., 7½-ft., 9-ft. and 12-ft. platform stake and the 8-ft. open express bodies, and cab-over-engine and dump-truck chassis—in short, the RIGHT truck for practically any job you can mention—will be found among the seventy-eight units in the Ford Truck line.

Next time you're in town, see your Ford Dealer. He can help you make farming pay better.

FORD TRUCKS

MORE FORD TRUCKS IN USE TODAY THAN ANY OTHER MAKE

Entered as second-class matter at Post Office at Cleveland, Ohio, under the Act of March 3, 1879. Additional entry at Mount Morris, Ill.

BIGGER CROPS
START RIGHT HERE!

This inset photograph of the tiller mechanism, with hood removed, shows the revolving tines which break up and mix soil, fertilizer and organic matter to full tillage depth.

Built Only By Graham-Paige

...In Seed Beds Prepared by ROTOTILLER

POWER TILLER OF A HUNDRED USES!

No crop can be any better than the seed bed that feeds it. And no other type of tool can make seed beds as fine, as rich, and as moisture-conserving as this rotary tiller. Here are the reasons.

Only this modern method breaks up and pulverizes both soil and humus and mixes them so uniformly, making a rich mulch just as shallow or as deep as you want it. It works in the driest, hardest soils, or in ground too gummy to yield to the plow. It makes a finer surface mulch, capable of absorbing and retaining moisture. It does all of this in one simple operation. Your Graham-Paige dealer will gladly explain the many additional uses, both with and without various specially-designed attachments, for ROTOTILLER—Power Tiller of a Hundred Uses.

GRAHAM-PAIGE MOTORS CORPORATION

Farm Equipment Division • Willow Run, Michigan

COSTS LESS DOES MORE

TO BUY · TO RUN · TO KEEP

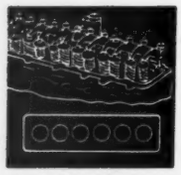
PER GALLON · PER TRIP · PER DAY

EVERY CHEVROLET TRUCK OFFERS THE ADVANTAGES OF OUTSTANDING ECONOMY AND EFFICIENCY—THANKS TO ITS FAMED 6-CYLINDER *VALVE-IN-HEAD* ENGINE

In every new Chevrolet truck—as in every one of nearly three millions sold in the past—the valve-in-head principle assures maximum engine efficiency. In other words, a valve-in-head engine just naturally gets a lot of extra work out of the fuel. So, maximum engine efficiency really means maximum economy—because you use less fuel to get a given job done, and get *more* done per gallon—whether it's doing chores around your farm, or speeding your products to market.

If you'd like to understand *why* the Chevrolet engine is extra-efficient, see the adjoining sketches and text. Or, you may just decide that valve-in-head engines *must* develop the most power . . . why *else* would they be used in cars, planes and boats that are built to set new performance records—on the land, in the air and on the water?

Less Head Area—Loss of heat means loss of power—and the Chevrolet valve-in-head design reduces heat-loss and saves power.

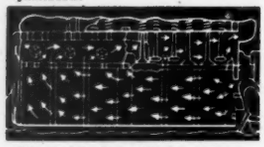


Controlled Expansion—The simplicity of the Chevrolet engine block permits each cylinder barrel to be completely water-jacketed.

Overhead Valve Ports—Both the inlet and the exhaust valves are advantageously located, above the spark plug and the piston.

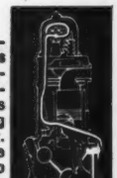
Faster Intake—Fuel mixture flows directly from the manifold into the cylinder, unimpeded by crooked fuel passages.

Quicker Exhaust—Exhaust gases escape straight upward through the exhaust port. The advantage is like that of a straight flue over a crooked flue.



Efficient Cooling—Water enters the cylinder block on both sides of the row of cylinder barrels. It circulates entirely around each barrel, and over its full length. Exhaust valve seats are specially cooled.

Special Valve Lubricating—Lubricating oil flows to the valve mechanism by way of a copper tube that passes through the cooling water in the block. After a cold start, the oil supply warms up quickly; then, as the engine heats up, the water keeps the oil from reaching excessive temperatures.



CHEVROLET MOTOR DIVISION, *General Motors Corporation*
DETROIT 2, MICHIGAN

SEE YOUR CHEVROLET DEALER . . . HE CAN SUPPLY CHEVROLET TRUCKS, STANDARD OR WITH SPECIAL EQUIPMENT, FOR *ANY* JOB.

CHEVROLET TRUCKS

PICK-UPS · PANELS · STAKES · CAB-OVER-ENGINE · TRACTOR-TRUCKS AND CHASSIS FOR SPECIAL EQUIPMENT

99 MODELS • 9 WHEELBASES • THE RIGHT TRUCKS FOR ALL TRADES

HELP YOURSELF TO A BETTER CROP

For a Quality Harvest, Ripen Fruit on the Tree

USE DU PONT PARMONE*

PRE-HARVEST FRUIT DROP INHIBITOR

YOU CAN ripen fruit on the tree—and help develop maximum color, quality and size for a premium crop—by using Du Pont PARMONE in the critical days just before harvest.

PARMONE helps prevent premature dropping and losses due to untimely winds or jarring—and also reduces the need for spot picking. It delays the weakening of the joint between the fruit stem and spur. Keeps fruit on the tree for the normal ripening period. One properly timed application of PARMONE may reduce pre-harvest drop of some varieties of apples as much as 35%. PARMONE becomes effective in 1 to 4 days—one application will be effective as long as 2 or 3 weeks.

DU PONT PARMONE is available in 3 time-tested forms: PARMONE dust, PARMONE in oil, and PARMONE liquid concentrated.

See your Du Pont dealer now for your supply of PARMONE. Consult him or local fruit authorities for advice on the best time to apply it. For free folder on PARMONE or other pest control products, write to E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington 98, Delaware.

FOR THE HARVEST OF BETTER CROPS

INSECTICIDES
DEENATE* DDT
GRASSELLI* Lead Arsenate
NUREXFORM* Lead Arsenate
ALORCO** Cryolite
BLACK LEAF† "40" & "155"
Basic Lead Arsenate
Calcium Arsenate
PARAPONT* (PDB)
Paris Green
Oil Sprays

FUNGICIDES
ZERLATE*
FERMATE*
COPPER-A Compound
SULFORON*
SULFORON X*
Copper Sulfate (monohydrated)
Copper Sulfate (Spraying types)
Bordeaux Mixture
Lime Sulfur
Flotation Sulfur Paste

WEED KILLERS
2, 4-D WEED KILLER
AMMATE* Weed Killer

OTHER MATERIALS
Du Pont Spreader-Sticker
Special Dust Mixtures
KRENITE* Dinitro Spray

* Reg. Trade Mark of E. I. du Pont de Nemours & Co. (Inc.)
** Reg. Trade Mark of Aluminum Ore Company
† Reg. Trade Mark of Tobacco By-Products & Chemical Corp., Inc.

DU PONT PEST CONTROL PRODUCTS

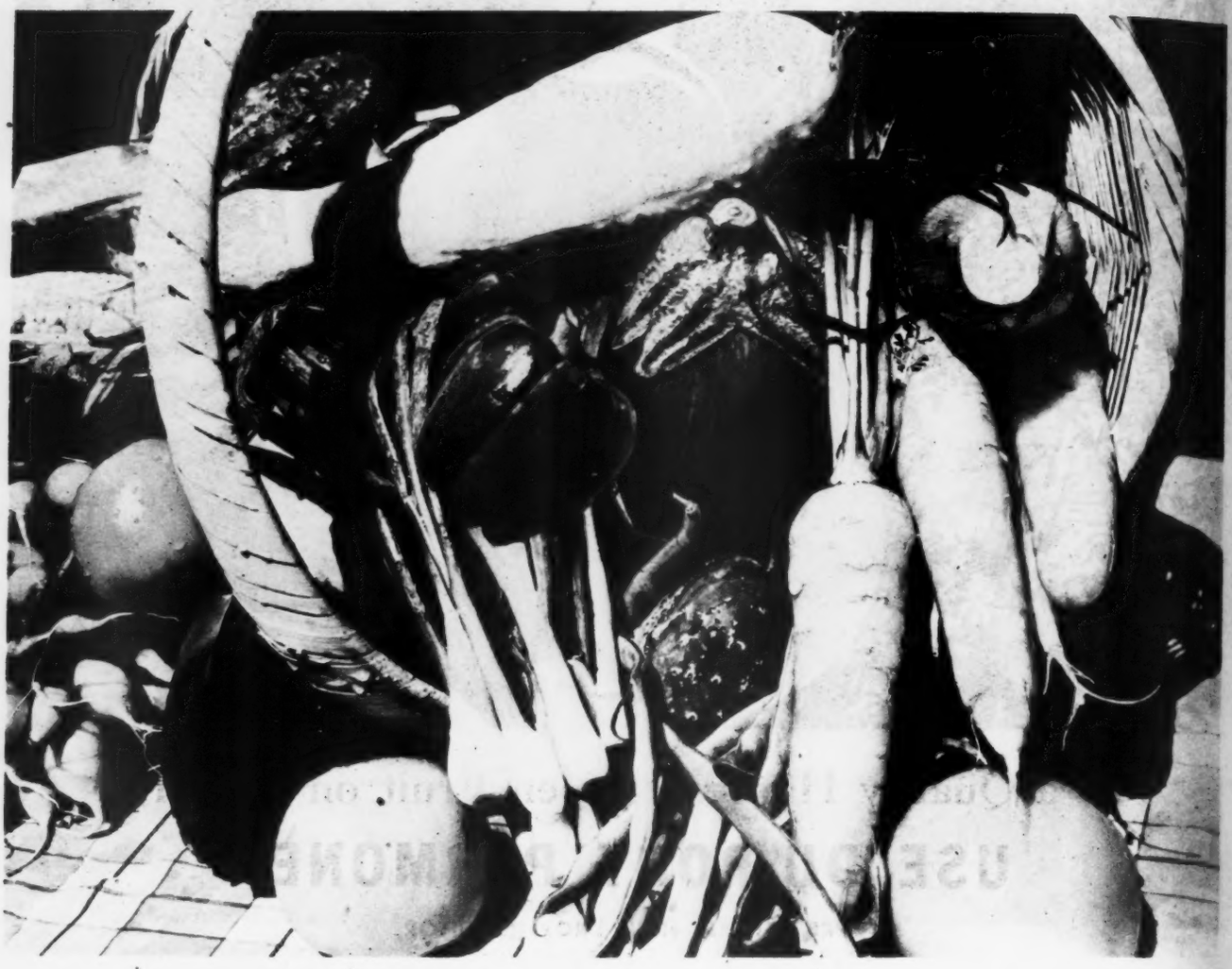
DU PONT

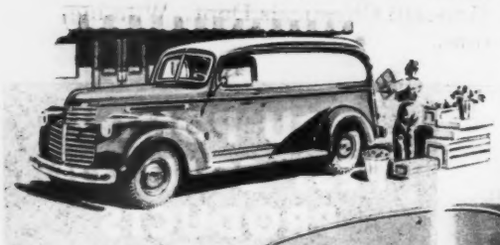
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

National Farm Safety Week is July 21-27. HELP PREVENT ACCIDENTS

Vitamins by the Truckload





Vegetables and their vitamins are vital to the nation's health. Motor trucks are vital in getting them to your table, fast and fresh.

From one Florida market, 50 kinds of fresh fruits and vegetables are shipped by truck to 26 states, ranging from Kansas to New Hampshire. At Los Angeles, more than 81 per cent of these "vital vitamins" arrive in trucks. Fruit and vegetable farmers alone employ more than 100,000 trucks in growing and harvesting crops. And that's not all . . . thousands more are used to haul the produce to processing plants and wholesale warehouses, to deliver it to grocery stores and kitchen doors.

Ranking high among the motor trucks which serve as the country's "vitamin vehicles" are powerful, reliable, economical GMCs. For in GMC's wide variety of models . . . ½ to 20 tons . . . there's an ideal truck type for every type of hauling job.

THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE • DIESEL

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

JULY 1946
VOL. 67 No. 1

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[PRINTED IN U.S.A.]

Home-owned power and equipment, built to operate at a profit regardless of acreage, is a long-range asset for the family-operated orchard.

Partners FOR A BIGGER TOMORROW

Dealer service, backed by large stocks of replacement parts and factory-approved tools can be depended upon to keep your orchard enterprise "under full power."

Allis-Chalmers power equipment and A-C dealer service are valuable partners in the operation of a high-income orchard. Join forces today for a bigger tomorrow.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

JOHN DEERE TRACTOR

YOU can get the most convincing proof of the superiority of John Deere Two-Cylinder Tractors from farmers who've owned *more than one.* There are literally thousands and thousands of them. Their actions speak louder than words.

These men were sold their first John Deere on features they thought a farm tractor should have. But they *enthusiastically bought* their second . . . third . . . fourth . . . even fifth John Deere *on first-hand knowledge of its performance in the field!*

If you're in need of a tractor, check up on the outstanding advantages of *economy* in operation and upkeep of the John Deere . . . the *simplicity* for more dependable performance . . . the easier, on-the-farm maintenance . . . the ease of handling . . . the *durability* for longer life which *John Deere two-cylinder engine design gives you.*

John Deere Tractors are rolling off the assembly lines in twenty up-to-the-minute models and six power sizes —for every farm . . . every crop . . . every pocketbook. If you cannot get one immediately, the day is not far off when the type and size that fits your needs will be available. Get in touch with your John Deere dealer today.

JOHN DEERE
Moline, Illinois

Oct. 30, 1945
"We have a 1939 Model "B", a 1941 Model "A", and a 1942 Model "H". Although we have asked these tractors to do the impossible this Fall, we have been more than pleased with their operation."
Horace Bradley & Sons
Wyoming, New York

* * *

Nov. 9, 1945
"I purchased the first John Deere Model "A" Tractor sold by the dealer at Murray, Nebraska. Since then I have owned five Model "A's". For a good and faithful servant, give me a John Deere Tractor every time."
Melvin R. Todd,
Union, Nebraska

* * *

Aug. 31, 1945
*"In the past ten years, I've owned five John Deere Tractors. This year, I purchased a new Model "A" and "B". **** I'm now waiting on delivery of a Model "GM"."*
Martin Schaefer
Kenedy, Texas

* * *

Aug. 13, 1945
"Do we like John Deere Tractors? Indeed we do. We own three Model "A's", one eleven years old, one eight years, and one we purchased this Spring."
D. D. Denman
Cortland, Ohio

* * *

Sept. 14, 1945
"I purchased my first John Deere Tractor, a Model "A", in 1937. I now have five John Deere Tractors and have my order in for a Model "GM"."
E. C. Swearingen
Hanford, California

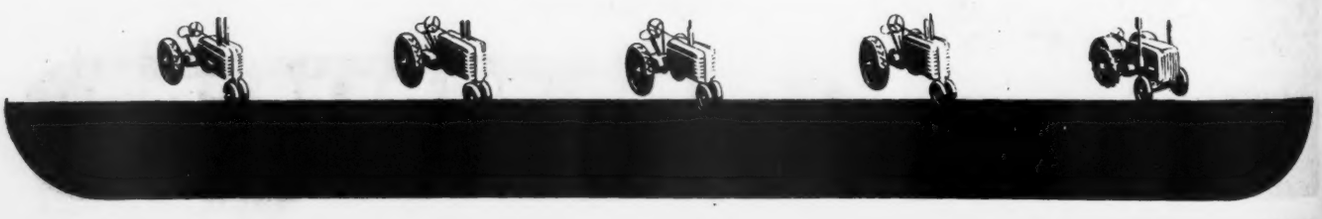
Oct. 19, 1945
"I have been using John Deere Tractors and farm equipment for the past ten years. I purchased my first Model "A" in 1935 and have bought two since."
Arnold Hines
Hamburg, Iowa

* * *

Sept. 10, 1945
"I have been the owner of John Deere Tractors and equipment for fifteen years. At present, I am operating seven Model "B's" and one Model "G"."
P. D. Fulwood, Sr.
Tifton, Georgia

* * *

June 12, 1945
"I have been using John Deere Tractors on my farm since 1929, and at present have four of them in use."
Albert Wierenger
Caledonia, Mich.



LETTERS TO THE EDITOR

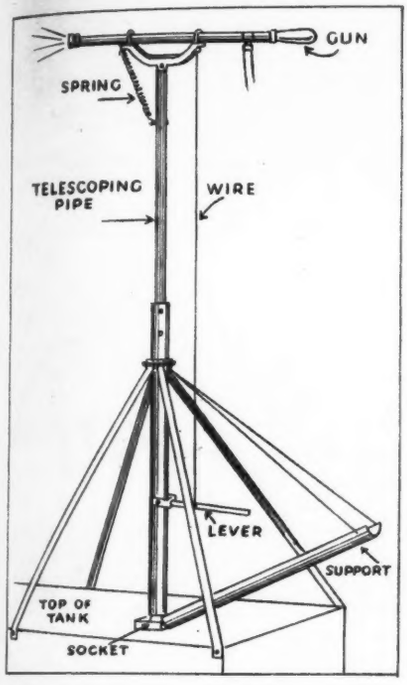
Telescoping Spray Mast

Dear Editor:

I have been spraying for several years from a nine foot tower. I have been terribly punished by the side throw over rough ground and have been unable to get the tops of leaves covered on large trees.

This year I have rigged a telescoping mast with the spray gun mounted on the top end in such a way that, while standing on the tank I can point the gun with ease in any direction—forward or back, up or down.

I am covering the tops of the leaves very



thoroughly and doing it very easily—all by the movement of a short lever.

I think the method is so far ahead of holding the gun in the hand, low down, that there is no comparison.

The mast is mounted on the tank top by a ball and socket so it can be turned easily to point the gun forward or back. Then—for up or down aiming—a spring tends to keep the gun aimed down. A wire running from the control lever works against the spring to point the gun up. So I can aim the gun in any direction by operating the lever.

A safety belt protects me from a fall from the tank top. The mast is made from three pieces of Quonset steel studding.

One piece just fits to telescope nicely into the lower two. It can be extended to 25 feet, but I use it at about 18 feet. Four studs come together at nine feet to form a support for the mast. The whole thing is inexpensive, and very good.

R. No. 6
Jackson, Miss. L. B. Benton

This idea of reader Benton may solve the spraying problems of other readers.—Ed.

Leaves Stub When Pruning

Gentlemen:

In pruning my apple tree, if a limb 1½ inches or more in diameter is to be cut out, I cut the limb off about 6 inches from the body or trunk of the tree to keep the body from decaying where the limb was cut off.

The stub limb is an aid in climbing the tree. I also let a water sprout grow on the stub to keep it alive, but cut the sprout off every winter in pruning and another one will come the next summer, etc. By experience, I find this method will keep the tree in much sounder and healthier condition.

R. 2, Box 44
Z. L. Massey Waynesville, N. C.

This sounds like a good method, if used within reason, and should prevent black heart from developing in the trunk of the tree.—Ed.

Fog Machine

Gentlemen:

The enclosed clipping and picture of a fog dispensing machine being used in Michigan orchards was taken from "Farm Progress"—a bulletin put out by the Goodyear Tire Co.

It is forwarded to you for whatever it might be worth to you.

If you have additional data and details of this new method of controlling orchard insects, we would enjoy reading about it in your magazine, along with the many other good articles you write.

Route 5, Box 48
Weatherford, Texas Geo. H. Crank

Your letter and the enclosed clippings are greatly appreciated. There is considerable interest in the development of the fog machine, and I understand that a number of the experiment stations are testing it as a method of applying insecticides.

While my information is not conclusive, it is my understanding that it has been very successful with DDT, and they have had some difficulty with applying fungicides.

The machine is being built by the Todd Shipyards, Inc. See page 13 for more information on this new machine. They hold the civilian rights for producing this Army equipment.—Ed.

Keeping Birds From Trees

Dear Editor:

I am writing to see if you can give me any information as to where I could purchase any device to keep the birds from eating the cherries in my orchard.

Thanking you for any trouble this may cause you.

Gormley, Ontario, Canada Clifford Winger

Keeping birds from eating cherries is a difficult problem. There is an acetylene exploder which goes off periodically and scares birds away from the trees. Of course, this can be a nuisance if your trees are close to your house.

Many ideas have been advanced to suggest ways of keeping birds from eating cherries. One is to string shiny metal on a cord and hang these shiny pieces of metal in the tree. They will reflect light, and the movement of the metal is supposed to keep the birds out of the trees. Another idea is to make a replica of a snake, and hang it in the tree.

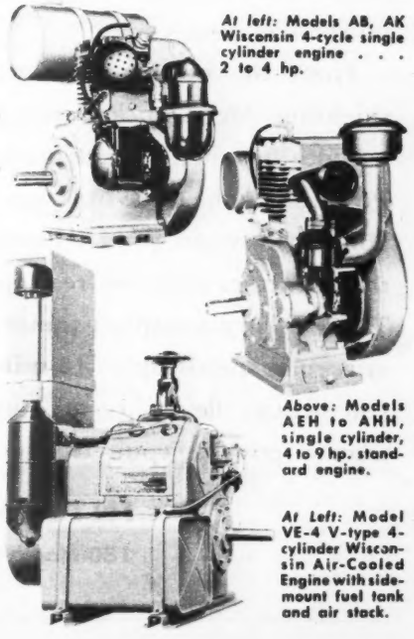
Planting mulberry trees in fence row works pretty well. It serves as a trap crop, as the birds prefer the mulberries to the cherries.—Ed.

You Can't Go Wrong if You Specify "WISCONSIN-POWERED Farm and Orchard Equipment"

Working against priceless, irreplaceable *time* . . . you cannot afford to do less than insure yourself against LOSS of time wherever possible by employing the most efficient and dependable equipment . . . *powered* by the most efficient and dependable *engines* that money can buy!

Leading manufacturers of dusters, sprayers, irrigation pumps, garden tractors and other farm and orchard power equipment, recognize the fact that *no* equipment is any better than the engine that runs it. Consequently, Wisconsin Heavy-Duty Air-Cooled Engines are widely specified as standard power equipment . . . selected for their thorough-going dependability and heavy-duty serviceability *plus* freedom from cooling chores and troubles, even under the most extreme and severest operating conditions.

You can't go wrong if you specify "Wisconsin-powered Farm and Orchard Equipment." Write for free copy of Condensed Catalog of engine-operated equipment.

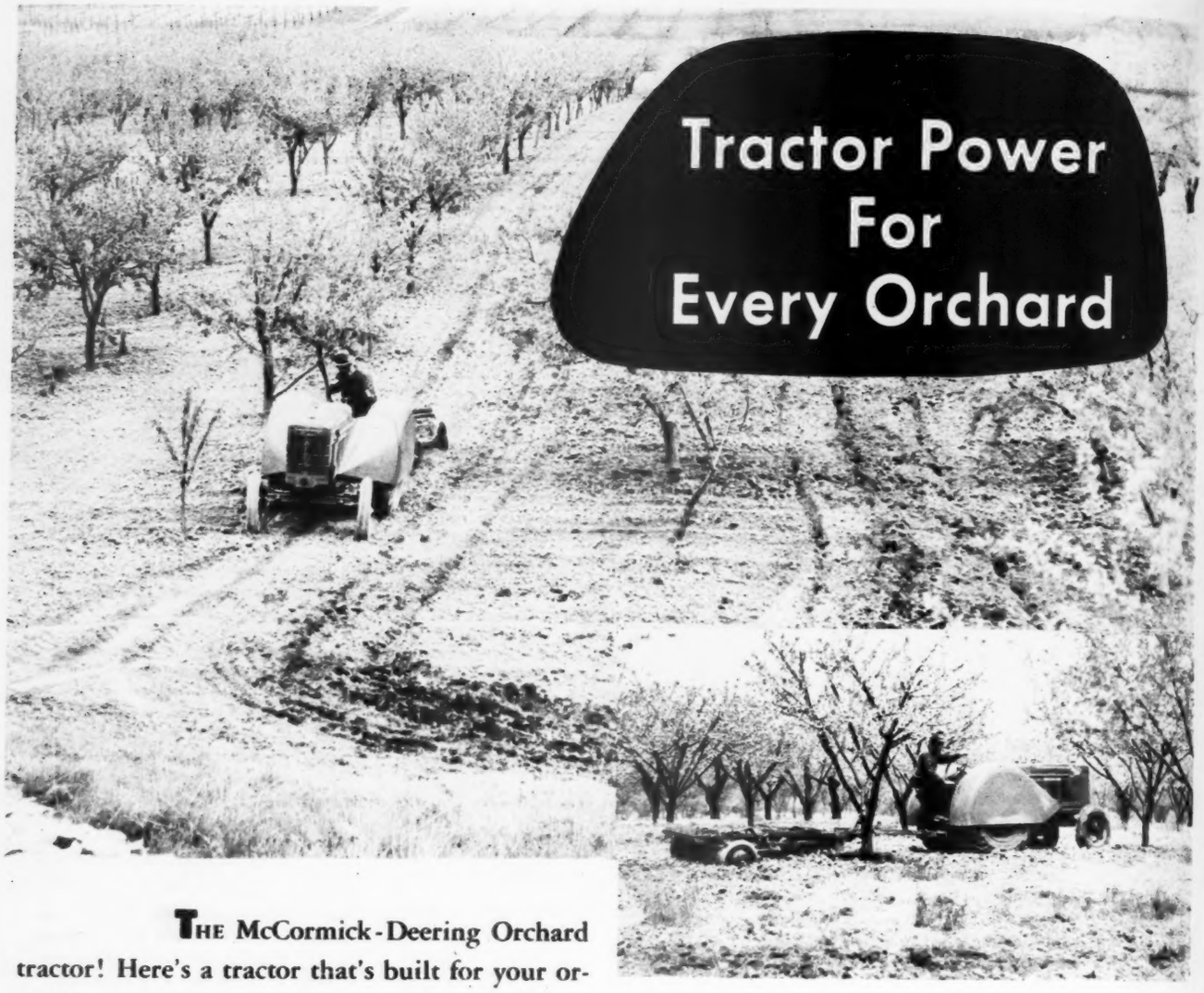


***At left:* Models AB, AK Wisconsin 4-cycle single cylinder engine . . . 2 to 4 hp.**

Above: Models AEH to AHH, single cylinder, 4 to 9 hp. standard engine.

***At Left:* Model VE-4 V-type 4-cylinder Wisconsin Air-Cooled Engine with side-mount fuel tank and air stack.**

WISCONSIN
MOTOR CORPORATION
MILWAUKEE 14, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines



Tractor Power For Every Orchard

THE McCormick-Deering Orchard tractor! Here's a tractor that's built for your orchard work—designed for the special kind of power you need.

From the power plant to the streamlined shielding, McCormick-Deering Orchard tractors are ideally suited to fruit growers' requirements. Powered by the same basic engine as the dependable, performance-proven Farmall H power plant, these tractors give you real operating efficiency. The five forward-speed transmission which permits road speeds up to 15 miles per hour, gives you greater flexibility of operation. The same tractor powers your tillage work and your hauling.

Besides these features, McCormick-Deering Orchard tractors give you great maneuverability. Differential steering brakes and extremely short turning-radius get you in and out of tight places between the trees. And the streamlined shielding protects low-hanging branches and fruit and young trees from damage.

Your International Harvester dealer will be glad to show you why your orchard power should be a McCormick-Deering Orchard tractor. Stop in and see him at your first chance.

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue — Chicago 1, Illinois

Product of

INTERNATIONAL HARVESTER

POST WAR MACHINERY FOR THE FRUIT GROWER

BRUSH SHREDDER, FERTILIZER DISTRIBUTOR, JEEP FEATURED

By A. VAN DOREN, Ohio State University

THE fruit growing industry has long been typified by the progressive attitude with which it has developed new machines and put them into their operations. The constant urge for perfection in the finished product, the ever increasing pressure of competition and the economic necessity of reducing cost per unit of fruit has been the mother of many humble and sometimes brilliant mechanical adaptations and labor saving devices.

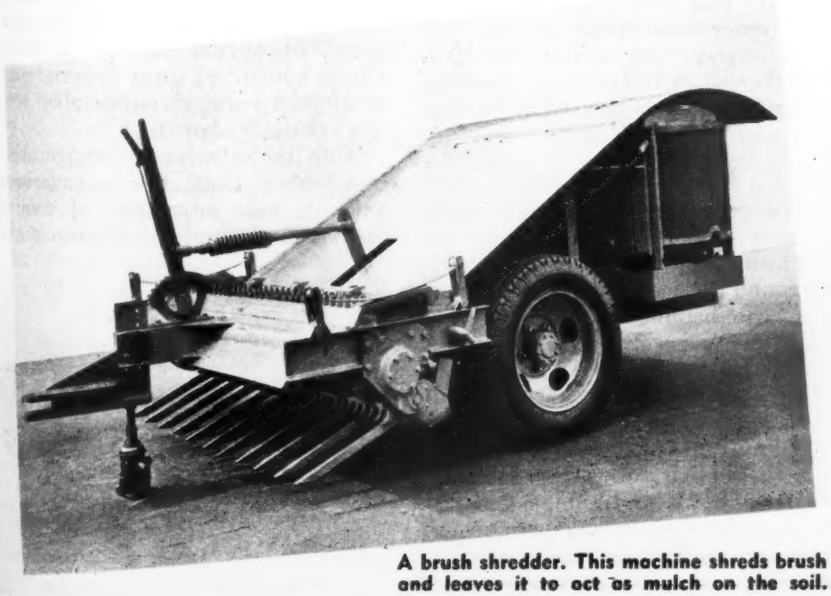
Today the fruit industry is coming out of the war with many new problems, but we stand on the threshold of a new era, better equipped with materials, machinery, labor saving devices and a proper mental attitude for overcoming obstacles than ever before. It can be a wonderful future for the fruit industry if the things that are now known and available can be put into full use and operation.

With labor so expensive and in such short supply we need to get the maximum utilization for the labor available to timely and properly handle our crops so that they will be delivered in the best possible condition. Walter Kohagen, Yakima, Washington, in a recent discussion of this vital topic pointed out several possibilities for substituting mechanical equipment to replace the shortened labor supply. Some of these possibilities are: Electric tractor trucks which may handle one or more stacks of apples instead of our present methods of handling the single box. Stacking machines, both separate or as a part of these electric trucks, which would boost and pile full stacks of apples, or with the use of pallets, several stacks of apples at one time. Mechanical feeding and dumping at our washing and grading machines. Similar equipment is now being used in orange packing houses and could be adapted, with some refinement, to the more easily injured apples.

Improved conveyor systems with the elimination of manual handling at turns or cross belts and at elevating and lowering. Power turns or flexible chain belts can perform most manual handling of boxes.

In addition to these suggestions that Walter Kohagen has mentioned we might list briefly and discuss some of the newer devices that are coming to the attention of the fruit grower. To begin with, we might mention the "brush shredder" which shreds up the brush in the orchard as the machine is drawn through the orchard leaving the shreds to serve as mulch and source of nutrients to the orchard soil. The shredder is a hammer-mill type of an affair and is of sturdy construction. Since it grinds limbs up to two inches in size, the power requirement is high and a large tractor with power take off is required to do the job. Where a few growers go in together on such equipment the cost might well be reduced to the point where the ease and convenience of such a machine might be shared.

A Jeep pulls a 200 gal. sprayer in Headlands Orchard, Mentor, Ohio. Its low clearance enables it to pass easily under trees.



A brush shredder. This machine shreds brush and leaves it to act as mulch on the soil.

Fertilizer Distributors

Several types of fertilizer distributors and lime spreaders are available and spot distribution or broadcast can be had at the option of the grower. One simple device for this purpose is the cinder or sand spreader used by the highway department. An adaptation of this principal is to use the rear end of an old car, turning the rear axle one quarter turn so that the drive for the differential faces up and then a disc is mounted on the stub of the shaft extending out from the pinion gear. This device is then equipped with a hopper over the disc and when towed the whirling disc distributes the

(Continued on next page)

(Continued from previous page)
fertilizers. Various types of grain drills can be used for fertilizer spot distribution work.

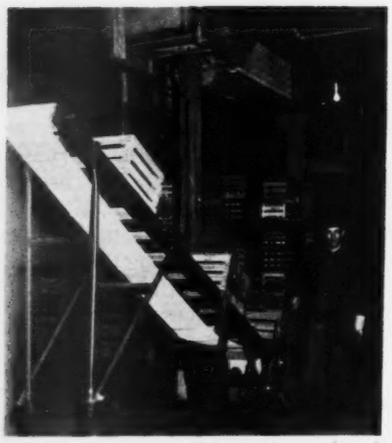
A device that greatly speeds up tree removal is the vertical mounted circular saw. When mounted on a tractor with an arrangement for raising and lowering the saw, a large apple tree can be quickly sawed off at ground level. Other electric driven chain saws are available for felling trees and a rapid removal operation can be conducted with such equipment. A somewhat greater disturbance of the soil is usually associated with the "bull-dozing" out of trees than some orchardists favor, although this method of tree removal is rapid especially if there is space to push the tree out of the orchard for bulk disposal.

The circular saw is a handy tool in getting rid of brush. It will also cut trees down.

Mechanical Buckrakes

Mechanical buckrakes and brush pushers are appreciated by many growers who want to rapidly get their brush out of the way. A wide variety of adaptations have been developed for different makes of tractors and old cars. The more elaborate outfits have hydraulic lifts that handle with ease the heavy pusher attachment, lifting the load of accumulated brush for rapid travel to the disposal area. Other outfits have various screw arrangements or pulleys. A good simple screw hoist can be made out of the steering gear of a car in which the steering wheel shaft is extended to a convenient place for the tractor driver and the driven gear is coupled to a hoist spool. A cable or chain is used to lift the brush pusher attachment.

This attachment is hinged at the rear of the tractor by the means of long poles that extend through from the rear of the tractor and support the teeth and background of the pusher. By simply windowing the brush with pitch forks, large quantities can be rapidly removed from the orchard with a simple brush pusher. The "buckrake" as attached to the rear of an old car is less maneuverable in the orchard and although it is successful in haying, it is not the best arrangement for the orchard. Such a device is of value in moving hay mulch into an orchard.



Elevator for use with trucks. Makes loading, stacking, and unstacking easier.

There is a wide choice of conveyors and elevating devices available to the fruit industry as well as easily made slides and rubber tired trucks. Handy belt pilers and loaders have great appeal to those who load or unload or stack cases of fruit. Units of great flexibility are available or can be made by the grower. Easily assembled conveyor systems can be set up in temporary situations and moved rapidly when needed.

Aluminum picking ladders, although not in general use should soon be available. A light strong ladder is a universal requirement and with the rapid conversion of aircraft plants we should soon have several models of light metal ladders to choose from. There is also a widespread need for a light durable field and storage box or crate that will nest so as to conserve space when empty and that will be so designed as to rest one upon the other when full of fruit. Possibly a light metal could be used in the construction of such a box.

Many Uses for Jeep

The jeep can find a wide range of uses in the orchard. A wide flat platform built so as to completely surround the jeep is a convenient device for hauling fruit out of the orchard. A low 2x2 inch rail around the platform will keep the fruit on and other slats fastened to the floor will keep crates or boxes from sliding about. Many model A Fords have found service in orchards when stripped down and equipped as described above. Orchard dusting equipment can be installed on jeeps and a dusting program used to supplement disease and insect control work. The making of irrigation ditches, and light cultivation are well within the scope of the jeep's usefulness, not to mention the endless travel and checking that has to be done in a large planting.

Sprayer Improvements

In both diseases and insect control, proper timing of the applications is of paramount importance. In recognition of the importance of this point our sprayers have been mounted on very large rubber tires that give greater assurance of getting around in the orchard when it is soft from spring rains. Tractors with wide treads or large tires have been secured. In addition to this the speed of the spraying operation has been greatly accelerated by the use of various types of "speed sprayers." G. W. Daugherty of Florida incorporated the principle of high volume of air movement and low velocity, the spray material being injected into the air-stream which carries it to the trees. The chief advantages of this principle lie in better coverage and less injury to the foliage. With suitable refilling equipment a large amount of spray material may be applied over a considerable area in a relatively short time.

With the advance in refrigeration engineering, fruit growers have been quick to take advantage of cooling their fruit promptly after harvest and

A home-made brush collector.

holding it in their own cold storage for disposal at the best marketing season. In many cases the grower becomes the retailer and claims the retailer's margin of profits. With multiple unit compressors—so that the starting time of the compressor motors can be separated by a few seconds and thus reduce the size of power lines and load requirements—growers have been able to install suitable cooling equipment on country lines that would not have stood the high starting power requirements of large single motors. The automatic controls available have reduced the attention of watching equipment and temperatures to a minimum. By the simple device of installing oversized blower capacity, growers have learned that it is no problem to maintain enough moisture in the storage atmosphere to prevent the shriveling of the fruit. A relative humidity of 85 to 90 per cent is the best for apples.

Filter for Storage Scald

Where storage scald is a problem, the gases which cause this disorder can be reduced below the concentration where they cause the trouble by simply employing the principle of the gas mask and filter out these gases by passing the storage air through a suitable quantity of activated charcoal filters and stirring up the air in the storage room so that no local concentration of these scald-causing gases occurs.

Home-made elevator for lowering crates into a cold storage room.

Lower part of crate lowering device.

The waxing of apples can be accomplished by a machine that simply floods the wax solution over the fruit, and then passes warmed air over the apples as they slowly leave the machine—the vegetable wax is then dried on the apples. The appearance of the fruit is enhanced and shrivel is reduced in storage. Certain types of waxes have been found to reduce the amount of storage scald that might otherwise occur on a given variety of apples.

Fog Machine Ready For Growers

After more than one year of continual field tests in all sections of the United States, the much-heralded fog machine is ready for growers.

Tests were conducted under the supervision of some of the country's leading entomologists, chemists and engineers.

The machine has been very successful with DDT, and has been used with many other types of insecticides, as well as with fungicides and weed-killers.

One model of the machine—which can be operated by one man—is powered by a small gasoline engine.

It operates on a combination of new principles developed during the war.

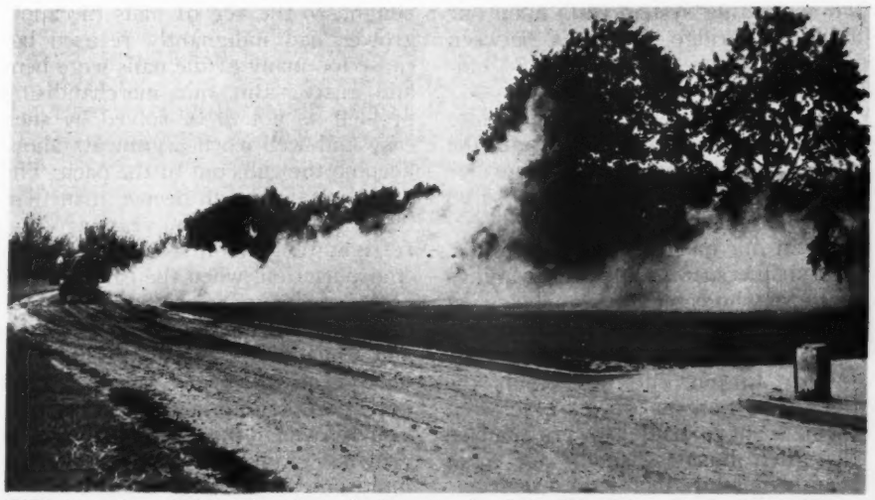
Called "TIFA" by the manufacturer, (for Todd Insecticidal Fog Applicator), the solution to be applied is drawn from a separate tank or barrel, so that there is no chance of contamination if tomorrow's material is not compatible with today's.

A special built-in radial flow, high pressure return nozzle keeps the material in the supply tank in complete suspension or solution, the manufacturer claims. TIFA uses no boiler, coils or water to make steam—it is a "dry" machine.

The ratio of volume in a fine fog particle is much less than that in an excellent spray.

The fog from the machine has a high rate of penetration—reaching remote places in the treated area.

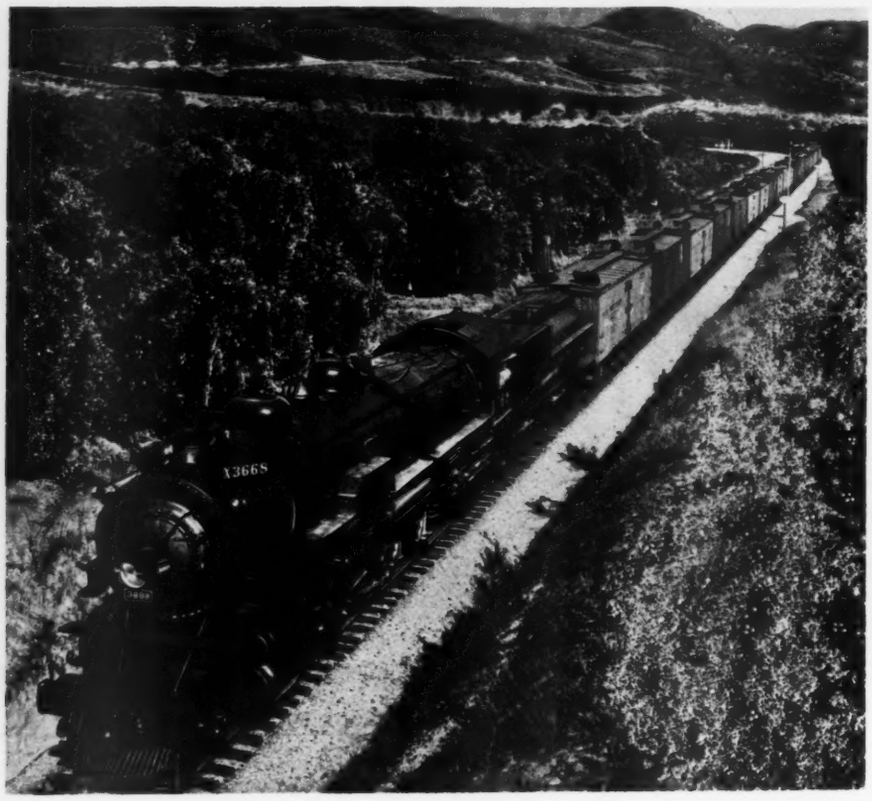
Growers have a new art to use in the battle against insects and disease in the orchard—fogging.



TIFA in action. Rolling fog through the grounds of the Woodbine, N. J., State Colony.

MUST BRIDGE GAP FROM GROWER TO CONSUMER

By TRUMAN NOLD
National Apple Institute



Refrigerated fruit express cars speed citrus from California to all Eastern and Canadian markets. Sunkist photo.

THE transportation crisis which grips the country as this is written, provides the ultimate illustration of the interdependence of all parts of our economy. When cities so quickly reach the brink of going on short rations, and growers see cut off the materials and supplies necessary for the growing crop, we realize with a shock how much our production and our marketing system rests upon our ability to bridge the miles between producer and user, swiftly and efficiently.

In everything we buy to put into production of our crop, we are in the role of users; and by and large, we are well served. Where can we find a handier reference when considering some of our merchandising problems, than in the success and shortcomings of those who cater to us as their customers?

Just as it takes more than a good factory to put into our hands the things we want as we learn to want them, so have fruit growers realized that their business entails far more than ownership of a good orchard.

How much study went into the formulation of that spray material? Into its packaging and protection in transit? Into the selection of the man or agency who sells it to you? Did the producer keep control of his product all the way through? Are you left in the dark as to its properties and how to use it?

An irate hardware man once compared the basket of apples he had bought, to the keg of nails the apple grower had indignantly refused because too many of the nails were bent and rusty. But our merchandising problem is not to be solved by such easy and well-worn arguments about keeping the culls out of the pack. The problem goes much deeper than that.

It was just about 50 years ago that refrigeration was first combined with transportation, when the early refrigerator cars were put in service. Modern fruit growing in the United States and Canada is a result of that combination in its various forms. For it put into operation a process of selection in which the specialist in fruit growing gradually won out over the multitude of casual growers, the general farmers who had some hit-or-miss trees in the pasture lot or fencerow. The specialists fill the produce counters, whether in roadside stands or super markets, with a remarkable quantity and variety of fruits. Now the competition is between the expert producers themselves. It will be won by those who can carry their control of quality, and hence of sales value, to the farthest limits.

The specialist who won out as an efficient producer has no problem harder than the one of bridging the gap between himself and the eventual user of his fruit. It is a losing game to produce topnotch fruit if it is not topnotch still when the customer takes it home. It is a losing game to offer topnotch fruit on the retail counter if the shopper is not prepared to appreciate its worth or to use it with satisfaction.

We have come a long ways. We have a long way yet to go. Have we come far enough when we still *sometimes* breed and grow varieties for their superiority in durability for shipment at the expense of eating qualities? Or pick good varieties while too green ever to ripen to full flavor, for the same reason? Or go on tolerating packages unsuited to the nature of the fruit or to the shopping habits of consumers? Or neglect to cultivate more appreciative purchasing and more satisfying use of the fruit? The answer is in the word "sometimes" above; there is real progress being made in all the problems suggested by the questions.

It is progress when the apple industry decides to intensify and push its search for practical measures to maintain the prime eating qualities of apples through all the stages of distribution. It is progress when it is proved that ripe peaches can be sent to market. It is progress when produce refrigeration goes into the retail market.

Air transportation of perishables captures the headlines, but there is more immediate significance in the development and production of improved refrigerator trucks, as well as rail cars.

The printed page and the voice on the radio have to take the place of the pursuasive salesmanship of the fruit-growing farmer who took his fencerow crop to town in his wagon and peddled from door-to-door; and of the farm and small town kitchen where the culinary arts were taught. When too few housewives know how to make honest-to-gosh strawberry shortcake, and too few can recognize more than one variety of apple, fruit growers have a merchandising job to do. The specialists have to close the gap they opened when the farmer peddler cut down the fruit trees in his pasture lot.

ATTRACTIVE PACKAGES AND SPEED ARE KEYS TO NEW MARKETS

Unit Packages and Advertising Must Reach Individual Buyer

By LOUIS E. CORSI

MERCHANDISING is the key to the postwar market.

But it does not begin or end on the shelves of the retailer. Merchandising begins with the picking of the fruit and ends with the consumption of the fruit by the buyer.

And it doesn't even end there—for the buying public must always be aware of the fruit—and know what it is, and why they want and need it.

When the buyer sees fruit in the store, he must be prepared to accept it. It is the job of advertising to see that the buyer knows about the different kinds of fruit, and even the different varieties of one fruit.

Pick Fruit For Consumer

Let's start at the beginning—the picking of the fruit. Here is where the consumer must first enter the mind of the grower.

Fruit must be picked so that it reaches the ultimate buyer in the best of condition. Too often, we think of ourselves first in the matter of packaging. It is easier to pack a crop of peaches in baskets—some of which probably are stored on the grounds somewhere—than it is to pack the crop into attractive consumer sized units.

The importance of the unit package cannot be over-stressed. The smaller package makes the product look better and more desirable.

It is more personal—it looks as if it were made for a housewife to take home. There is less chance of fruit being picked over in these small packages.

There are many ways of preparing the unit package. One method is the wrapping of the fruit in a cellophane bag. Another is a small box, covered with a transparent plastic.

One manufacturer is testing a wooden box designed to hold 18 one-pound unit boxes. It is made of wood, and glued together. The cover is taped on—no nails are needed. The crates are undergoing laboratory tests before being put to a shipping test.

While getting the fruit to the buyer in attractive packages is most important, it is just as urgent to get it there as ripe as possible. The market is much broader for fruit in prime tree-ripened condition than for fruit picked before it is ripe, and shipped to sales markets.

Top left—Modern packaging features eye-catching brightness, and consumer size. Photo by Modern Packaging Magazine.

Above—Display cards like this attract attention, help clerks make sales.

Wax emulsions have been developed that prevent shriveling of fruit in storage by loss of water. It allows fruit to be stored for sale between harvesting seasons. A machine is available that coats the fruit with the wax before packing.

Many plastic coverings are available—some of which may be sprayed on the fruit. Pliofilm, velon and koroseal are a few of those available. These impart no taste or odor to the fruit and protect it from scuffing damage.

Faster Rail Schedules

The process of shipping is being speeded on all fronts to allow riper fruit to be shipped. One western rail-

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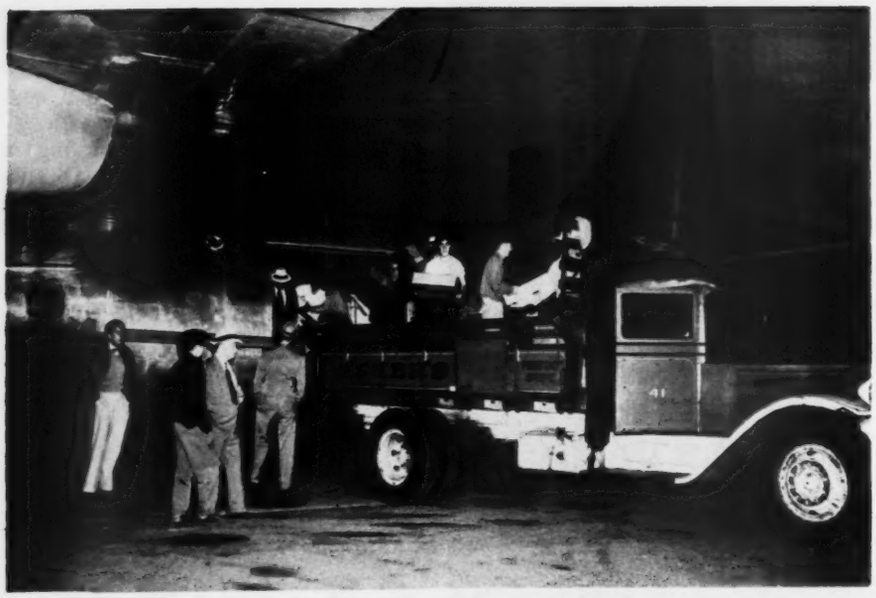

Unloading an airplane shipment of fresh fruit at the Cleveland Municipal airport. Potential air shipment of fresh fruit is greater than for any other commodity.

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road is ready with a fast schedule, and new refrigerator cars to give quick delivery to western growers.

With the trend on all railroads toward new aluminum cars, and faster schedules, riper fruit can be shipped.

Air Shipments

Recent experiments with air freight are promising. Fruit picked on the West coast one day can be on sale in Eastern markets the next morning.

Experimental shipments are constantly being made to develop this into a real channel of supply. Success is a certainty in the not too distant future.

Another trend that must not be overlooked is that of cooperative marketing of a crop by a group of growers. A better control over the market is held by this method of selling from a central point, as a group. Experiments at the Wooster Experimental Station of Ohio State University are proving successful.

Advertise

The last phase of the merchandising process can well be the most important of all. It is the matter of advertising the product.

The crop must be sold, and a demand created. No grower ever made money growing a crop—he made money selling it. And to sell a product properly, the consumer must be taught to want it.

He must be shown how to use it—too many people buy an apple for eating, and find it isn't tasty. It was a cooking apple they bought.

The housewife must be educated to variety. She must know that a Rome apple is a good baking apple, that Delicious is good for eating, others for canning. She must know what kind of plum to buy for canning, what kind makes good jelly, and what kind is good to eat as fresh fruit.

The job of advertising is to teach the housewife new things about the product. Teach her how to fry apple slices—how to make apple pancakes. That will create a proper market, and make the demand worthy of the market. •

Then it boils down to a matter of the consumer. Think of the consumer when you pick, when you package, and when you sell. Advertise the product, and its by-products.

We can't stop at advertising peaches, we must advertise peach desserts, pies, butters and jams. Tell the housewife what variety to buy for a certain purpose.

The market is expanding, and the consumer is getting more demanding. He will have cold storage boxes at home, and be ready to use more fruit in many new ways. The grower must anticipate this need, and educate the consumer to buy the product.

We must reach the consumer, and advertising is the way—display labels at the retail store, pamphlets in the box of peaches, ads in magazines, articles about fruit in general magazines. It is the job of the grower and his organizations to get the message across.

Waldorf Salad
It's McIntosh Time
...TIME FOR APPLE PIE, SUGAR & SPICE AND EVERYTHING NICE!
Serve Blue Goose
FRESH PEACHES
For a Tasty-Healthful Dessert
"BEST OF THE BETTER CROPS"

Top—Display advertisements usable in newspapers and magazines tell customer new ways to prepare fruit. Bottom—The type of general advertisement that keeps the fruit before the public's mind. Billboard ad.

ORCHARDIST DEPENDS ON CHEMICAL INDUSTRY

Complex Organic Compounds Among Many New Materials

By JOHN R. MAGNESS and MARION C. GOLDSWORTHY
United States Department of Agriculture
Agricultural Research Administration
Bureau of Plant Industry, Soils, And Agricultural Engineering

THE orchardist is dependent upon the chemical industry for the materials he uses to control insects and diseases, to retard fruit drop of apples and pears, and to control certain types of weeds. Blossom thinning by the use of certain chemical sprays is being used to a limited extent by some growers. Treatments designed to delay the opening of the blossoms have been tried experimentally. Some recent chemical treatments of the fruit prior to packing give promise of reducing the storage scald of apples even more effectively than oiled paper.

In this discussion we will not cover the rather remarkable developments in the field of insecticides. We will discuss very briefly other chemicals of present or potential value to orchardists. We must emphasize that many of the materials mentioned are still in the testing stage and cannot yet be recommended for orchard use. Discussion is not only brief but is incomplete. New materials are appearing rapidly and a material that appears promising today may soon be superseded by a better one.

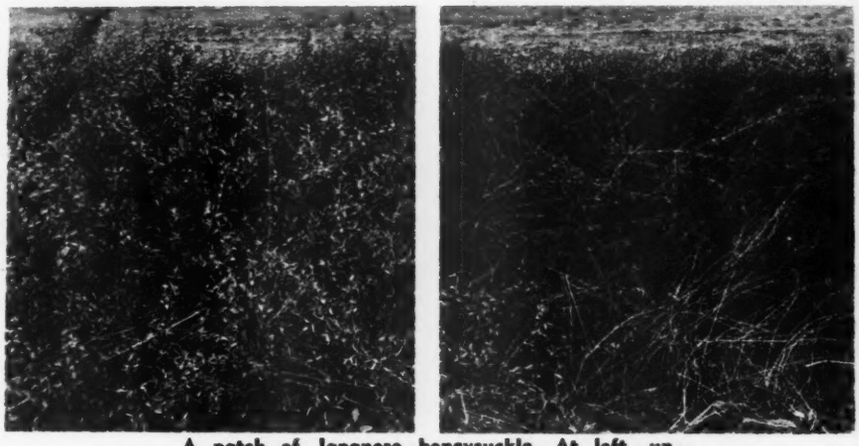
Many of the new materials that offer promise for use in the orchard industry are organic chemicals—chemicals that have the element carbon present in the compound. Many of the organic chemicals are very complex compounds. Elements or groups of elements can be added to them in such ways as to give literally thousands of different compounds falling within a certain general group. These substitutions or additions, even though they appear minor, may radically modify the chemical from the standpoint of its effect on the plant or on plant pests. Thus even though a tremendous amount of work is being done in studying organic chemicals as fungicides, growth regulators or so-called hormones, insecticides, and for other agricultural uses, the field will not be fully explored within the lifetime of any reader of this article.

Fungicides

For a half century, bordeaux mixture and other copper compounds, and lime sulfur and various other forms of inorganic sulfur, have been the basis of our disease control programs in orchards. These groups of materials are powerful fungicides, are relatively cheap and abundant, and for a long time to come will have an important place in orchard spray programs. Both copper compounds and sulfur compounds under certain conditions can and do cause serious damage to foliage and fruits. The copper compounds are particularly injurious during periods of cool, wet, weather. The soluble sulfur compounds may be injurious under the same conditions and all sulfurs are likely to prove injurious when temperatures are very high. Sulfur, when used with oil or prior to oil, is particularly injurious to foliage and fruit. Thus the search is on for chemicals that will be safer to use from the standpoint of the crop and that will be at least equally effective in the control of diseases.

For the past decade, intensive work has been done in the use of organic chemicals as fungicides. Three general groups of organic materials are proving highly valuable in the tests conducted to date.

The first group is the derivatives of dithiocarbamic acid. This acid is combined with heavy metals to form a group of metal derivatives that include Fermate, the iron salt; Zerlate (Methasan Ziniate), zinc salts; and Leadate, the lead salt. These materials have given generally good control of such apple diseases as scab, bitter rot, blotch, Brook's spot, and cedar rust and are promising for cherry, plum and peach diseases. They appear to cause less injury to the trees and fruit than do sulfur or copper compounds. Unlike sulfur they can be used in conjunction with oil. They may be combined with the arsenical and organic insecticides. Lime appears to lower their value and generally should not be used with them. The use of Leadate on fruits may be questioned because of the lead content which is objectionable from the residue standpoint.



A patch of Japanese honeysuckle. At left, untreated. At right, treated with 2,4-D weed-killer.

Other derivatives of dithiocarbamic acid which do not contain the heavy metals include such compounds as Thiosan (tetramethylthiuram disulfide); *MTD* (morpholine thiuram disulfide); and Dithane, the sodium salt of ethylene bisdithiocarbamic acid. Dithane appears too injurious to be used on fruit trees but its zinc derivative is apparently less injurious and may be useful in the spray program. This latter group of materials has not yet been tested as extensively on fruits as the metal dithiocarbamates. They appear to be more potent fungicides but also more injurious to the plants. Some of them may prove valuable for blossom thinning.

A second group of organic materials of promise as fungicides is the quinone group. When chlorine is added to the quinone group we obtain powerful fungicides but they may prove too injurious for orchard use. Spergon (tetrachloroquinone) and (dichloronapthoquinone) are valuable as seed disinfectants. The latter controls most of the diseases of apple, cherry, pear, and peach but has caused injury to yellow-skinned apples, grapes, and plums. Relatively little work has been done on this group of materials but they are sufficiently

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promising to warrant much more investigation.

The third group or organic chemicals that has yielded interesting compounds from the fungicide standpoint are the quaternary group. These have been used for a number of years as medical disinfectants. Because of their great solubility they have been thought not particularly suited to orchard use where adherence is so important. Isothan Q 15 (lauryl isoquinolinium bromide) and Puratized (phenyl mercuri triethanol amonium lactate) are compounds of this type. Isothan Q 15 does not weather well but Puratized appears to have a lasting effect. Both are powerful fungicides. Puratized, being a mercurial compound, is objectionable from the residue standpoint for use on fruits. There are an unlimited number of compounds in this general group and much work is warranted on them.

Growth-Modifying Chemicals

Another group of chemicals of much interest to fruit growers are the so-called growth modifiers, or hormone group. These are compounds which appear to stimulate certain processes in plants when applied in extremely dilute concentrations. At higher concentrations they are extremely toxic and certain of them have had phenomenal development as weed killers.

Naphthalenacetic acid and naphthalene acetamide as sprays to retard the harvest drop of apples and pears are now in wide commercial use, although the first experimental trial of the material for retarding fruit dropping was as recent as 1939. An interesting development in that field occurred last season when 2,4-dichlorophenoxyacetic acid, widely used as a weed killer, was tested experimentally on a number of apple varieties. It proved outstandingly effective on the Winesap variety in the West and on the Stayman Winesap in the East. It was relatively ineffective in tests on Delicious, Golden Delicious, and York Imperial. On the Winesap and Stayman Winesap, however, it had a much longer period of effectiveness than any other chemicals so far tested, indicating that it might be incorporated with the last codling moth spray and give effective protection. However, on the basis of tests conducted so far, its effectiveness will probably be limited to certain specific varieties.

Aside from the use of this new chemical for fruit sticking sprays, progress is being made in methods of application that may be useful in some orchard districts. Experiments conducted in Washington State last season indicated that these compounds applied from airplanes with a very limited amount of oil carrier misted down over the trees gave very satisfactory commercial control of dropping. The method was not quite as good as the standard spraying but it approached the standard spraying in effectiveness.

Growth Chemicals and Storage Scald

Tests carried on for 3 seasons at the Plant Industry Station, Beltsville, Maryland, have indicated that naphthaleneacetic acid and naphthaleneacetamide applied to the fruit surface, preferably in a wax or oil, such as lanolin, at time of packing will greatly reduce storage scald. In the tests to date, the growth chemicals at concentrations of 100 to 500 ppm (parts per million) have been more effective than oiled paper—the standard scald control for the past 25 years. More extensive tests in commercial packing houses will be made this season.

Growth Chemicals as Weed Killers

Certain growth chemicals applied in concentrations approximately 100 times as strong as when used for fruit sticking sprays are extremely toxic to many plants. Of those tested to date, 2,4-dichlorophenoxyacetic acid (2,4-D) has been the most toxic and at concentrations of around 1,000 ppm has come into wide use as a weed killer. The chemical apparently is absorbed by the plant, and is carried to all parts, including the roots, before the plant dies.

Among serious orchards weeds, bindweed or perennial morning glory appears to be more nearly eradicated by treatment with 2,4-D than by any other means. Treatments for two seasons may be necessary for nearly complete control. Japanese honeysuckle, a serious pest in some non-cultivated orchards, is very readily controlled. Results with poison ivy are more erratic, some investigators obtaining good results and some poor. At present, the use of 2,4-D for poison ivy should be considered experimental.

Delaying Time of Bloom

Reports from some investigators have indicated that growth chemicals can be used to delay bloom and reduce the spring frost hazard. Tests in the orchard at the Plant Industry Station, Beltsville, Maryland, covering both apples and peaches, several growth chemicals and varying strengths, and times of application, have proved disappointing in delaying bloom in the spring. Vapors of these chemicals in storage rooms where nursery stock is held over winter have delayed root and shoot growth of rose plants and fruit trees in the storage. So far, however, we have been unable to appreciably delay bloom in the orchard with any of the treatments applied.

Blossom-Thinning

There is much interest in developing materials that will reduce the set of fruit of biennial varieties of apple, and of other kinds that frequently set too heavily, in order to reduce hand thinning and secure more regular protection. The materials most widely tested have been sodium dinitrocresylate (Elgetol), dinitro-orthocresol powder (DN Wettable No. 2), and the amine salt of dinitro-orthocresol (DN No. 111). In many tests, these materials applied at full bloom have satisfactorily reduced set of biennial apple varieties without excessive injury to the tree. In some tests crop reduction has been insufficient; in other tests over-thinning has resulted. Some recent tests have included the hormone type chemicals, but these have not yet been proved effective for the purpose. Such treatments to reduce set have promise in correcting serious over-setting, but their use probably will always involve considerable risk, since the set of fruit is so largely dependent on prevailing weather conditions.

The search for chemical materials of value to the fruit industry continues both by State and Federal research agencies and by commercial firms. Materials for coating fruits or washing fruits to reduce decay and shrivelling are particularly being sought. Materials for spraying trees to reduce moisture loss from the tree during periods of severe moisture shortage are receiving some attention. Rapid developments are also occurring in methods of applying chemical materials to the trees. Special attention is being given to applications of so-called liquid dusts—dusts that are sprayed with water as they leave the machines. Some types of organic chemicals can be applied as aerosols. These newer methods of application may make the airplane of greater value in the control of orchard pests.

The past decade has seen great changes in the use of chemicals in the orchard, both for pest control and for controlling certain functions of the trees. The next decade should make for at least equal progress.

Applying hormone spray to prevent dropping of apples. Photo by Bureau of Plant Industry, U. S. D. A.

INSECTICIDES MAKE RAPID PROGRESS

State and Federal Agencies Test Multitude of New Types

By B. A. PORTER
United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

Photo by Monkmeyer

NEW insecticide materials for possible orchard use are appearing on the horizon in bewildering numbers. Most of them are complex organic compounds with such long names that they are referred to by numbers or letters. State and Federal agencies are testing more new chemicals than ever before, and practically every major insecticide company has several new products in various stages of development.

Mention of new insecticides immediately suggests DDT, which has received such extravagant publicity during the past few years. This compound was discussed in a number of articles in the February number of the AMERICAN FRUIT GROWER, and little can be added at this time. Many fruit growers are using DDT on all or part of their acreage this season, and by fall we will have a much clearer idea of the probable future status of this material and the problems which may result from its use. By slight changes in the complicated chemical formula of DDT, large numbers of closely related compounds can be produced. Certain of these related compounds have shown promise in preliminary tests.

Benzene Hexachloride

A second material of interest is benzene hexachloride, sometimes referred to as "666". Benzene hexachloride exists in a number of different forms, or isomers, the most effective of which is the gamma isomer. The commercial product is usually a mixture of several forms, often said to contain about 10 per cent of the gamma isomer. Benzene hexachloride is quite effective against the codling moth. Preliminary tests have shown it to be even more effective than DDT against grubs of the Japanese beetle in the soil, although its durability has not been determined. It is also reported to be effective in the control of the plum curculio. Unfortunately, benzene hexachloride has a persistent, musty odor, which is retained by fruit sprayed within a few weeks of harvest. It is possible that the odor from early applications will wear off by harvest time. The gamma isomer is said to lack this offensive odor.

Xanthone is another material that has shown considerable promise for codling moth control, especially in the Northwest. The results have been irregular, however, and the acceptance of the material by growers has been limited. Xanthone has exhibited one unexpected quality. Its continued use seems to prevent outbreaks of orchard mites and the woolly apple aphid. On this account there is interest in the use of Xanthone with DDT, the use of which is often followed by marked increases in the numbers of these pests.

Phenothiazine

Phenothiazine, which has been under investigation since 1934, has not been entirely dropped from consideration in spite of several practical disadvantages. A few growers in some areas are using it, usually mixed with lead arsenate.

In the course of investigations to develop better methods of treatment for curculio control, Oliver I. Snapp, of the Fort Valley, Ga., laboratory of the Bureau of Entomology and Plant Quarantine, has been treating the soil with an emulsion of dichloroethyl ether during the period when the curculio is in the ground, in order to reduce the second brood of worms, which often cause serious losses to main-season varieties. In more northern localities, where a second brood of curculio rarely or never occurs, the use of this method would be of interest chiefly as a means of reducing extreme curculio infestations that have not yielded to the usual methods.

Ethylene Dichloride

Ethylene dichloride, recently developed for peachtree borer control, has certain advantages over paradichlorobenzene, and in the southern states has proved much more nearly safe on young trees. Elsewhere, especially in middle Appalachian peach orchards, a great deal of injury following the use of ethylene dichloride was reported in 1940. Although the greater part of this injury was actually caused by winter conditions, it has become evident that ethylene dichloride may damage peach trees if too much of the material is placed directly on the trunks of the trees, or if applied around trees standing in water-logged, heavy soil late in the fall. In recent years in the Fort Valley, Ga., area, propylene dichloride has been found more effective in borer control than ethylene dichloride and, at the strength needed for equivalent effectiveness, no more likely to cause injury than ethylene dichloride. Its use costs less.

Dinitro-ortho-cresol is already used by some growers against the eggs of apple aphids, and as a fungicide. M. A. Yothers, of the laboratory of the Bureau of Entomology and Plant Quarantine at Yakima, Wash., has found that in certain mixtures this material will control hibernating codling moth worms in their cocoons on the trunks and larger branches of apple trees. If used after the buds have started, special care must be taken to avoid getting any of the material on the foliage, which may be severely injured.

Dinitro Compounds

Certain mixtures containing other dinitro compounds are being used on apple trees in foliage for the control of orchard mites, which are coming into greater prominence following the use of DDT. The margin of safety, however, is very narrow, and the dinitro compounds are not yet generally recommended for this purpose.

The future of these many new materials is hard to predict at the present time. Many of them will, of course, disappear from the horizon as intensive study and orchard experience reveal fatal weaknesses, or as still more effective products are developed. Many of these new chemicals, however, will undoubtedly meet long-standing needs for more effective materials, and will earn for themselves places in the list of practical orchard insecticides.

CHANCE AND SCIENCE PRODUCE NEW VARIETIES

The Three Ways—Hybridization, Chance Seedlings and Mutations

By STANLEY JOHNSTON
South Haven Experiment Station

PLANT improvement is nearly as old as agriculture. References were made in the earliest Chinese literature and in the Bible regarding the importance of selecting seeds, cuttings or scions from the best individual plants. One of the early Chinese emperors is said to have originated the imperial rice by preserving and propagating a form which he noticed in the field.

There are two broad groups of plants from the standpoint of how they are reproduced. First, such crops as beans, peas, wheat, oats, corn, etc.—mostly grains, vegetables and grasses—propagate true to seed, except for simple fluctuating variations. Second, a group of plants which are reproduced by the use of vegetative parts such as bulbs, tubers, grafts, cuttings, runners and the like. For instance, tulips are reproduced from bulbs; apples, pears, peaches and other tree fruits from grafts or buds; currants, gooseberries and blueberries from cuttings; and strawberries from plants formed on runners.

It is important to keep in mind that if we should plant 100 seeds of Golden Bantam corn we would get approximately 100 plants practically identical to Golden Bantam, but if we should plant 100 peach seeds of any variety we would get 100 different kinds of peaches. Because of this situation, the fruit grower cannot just plant a few seeds of the Elberta peach if he wants trees of that variety, or of the Bartlett pear, or the McIntosh apple, but usually depends on the nurseryman to grow his trees and berry plants for him by means of budding or grafting, the use of cuttings, or other means of vegetative propagation.

New fruit varieties originate in one of the three following ways—as chance seedlings, by hybridization, or as a result of mutations.

By far the greater number of our fruit varieties grown at the present time were discovered as chance selections. Practically all of our apple varieties originated as chance seedlings in orchards, fence corners or back yards.

A Calville Blanc apple tree at Geneva, N.Y. An example of valuable mutation. This apple is high in vitamin C content.

The Elberta peach is an outstanding example of a chance selection of great value. This variety originated on the farm of Samuel H. Rumph of Marshallville, Georgia, in 1870. It is by far the most widely planted peach in the world.

The famous Bartlett pear was discovered in a woodlot in England about 1799 by a schoolteacher named Stair.

The McIntosh apple originated as a chance seedling on the McIntosh farm in Dundas County, Ontario. It was first propagated about 1870. The widely grown Delicious apple originated as a chance seedling on an Iowa farm somewhat over fifty years ago.

Chance seedlings will continue to play an important part in the development of new fruit varieties. Due to the fact that seeds of our common fruit plants do not reproduce exactly the kind from which they come, there is always a chance that a good variety may come from a peach pit thrown in some fence corner, or from an apple seed growing from some apple core tossed into a field by a boy on the road to the old swimmin' hole.

The second, and probably most widely used method of developing new fruit varieties at present, is by means of hybridization. A simple definition of hybridization is as follows:

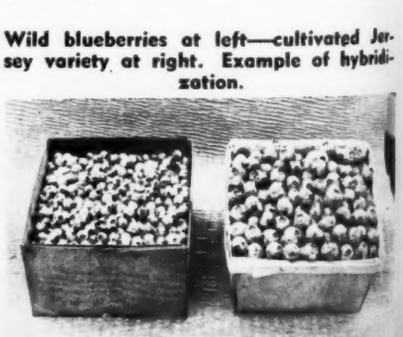
"Hybridization is the crossing of varieties or species to produce new individuals. This crossing is done at blossoming time by controlled methods whereby the pistil or female part of the flower is fertilized by the pollen or male part of the flower of another variety. In the seed that develops are found the various inherited characters of both parents. If the seed is planted and the resulting seedling brought into bearing, the combination of the characters of both parents as expressed in the new individual can be observed."

Hybridization was practiced in ancient times in China with various flowers, in Italy during the Roman Empire with roses, and in the 17th Century in Holland with tulips and primulas; and the artificial pollination of the female date palm was mentioned by Theophrastus at the beginning of the study of plant culture. However, the sexuality of plants was not established until it was proved experimentally by Camerarius in 1691.

The first hybrid of which there is a record was made in 1719 by Thomas Fairchild, an English gardener, who crossed the carnation with the sweet william. The first exact knowledge of hybridization dates from about 1761 when Koelreuter began publishing the results of his observations, but even his work had little bearing on practical plant breeding. The systematic breeding of plants may be said to have begun with the work of Knight and Von Mons about the beginning of the nineteenth century, both doing their work principally with fruit plants.

While the early hybridizers of fruit plants were rather groping in the dark, they made some very valuable contributions to our fruit variety lists. At least two early pioneers in America deserve mention. Charles Mason Hovey of Cambridge, Massachusetts, developed the Hovey strawberry (1836) which is generally regarded as the starting point of American commercial strawberry growing. Ephraim Wales Bull of

Wild blueberries at left—cultivated Jersey variety at right. Example of hybridization.



Concord, Massachusetts, as the result of eleven years of patient work in crossing the native grape species, Vitis labrusca, with European varieties, selected the Concord grape, (1849) from among 22,000 seedlings. This grape variety has become known throughout the world and its value to the horticultural industry has been so great and widespread as to defy accurate measurement. It is sad to relate that in spite of his great contribution, Ephraim Bull died in poverty and neglect and broken in spirit.

About the middle of the 19th century an Austrian monk named Mendel was experimenting with peas in his little monastery garden. The U. S. Department of Agriculture Yearbook for 1936 (page 121), describes his work simply as follows: *"Mendel did a simple but revolutionary thing that apparently had not occurred to previous workers who had been trying to solve the secrets of inheritance. He carefully sorted the progeny of his parent plants according to their characters and counted the number that had inherited the same character. By doing this, he discovered that when the things he was studying were handed on by the parents, they were distributed among the offspring in definite mathematical ratios, and in no case was there a significant variation from these ratios. For the first time, Mendel established definite laws of inheritance."*

Mendel reported his results at a little meeting of scientists and in 1866 they were printed in an obscure Austrian journal, but no one appreciated the significance of his discoveries until in 1900, three European botanists, Correns, DeVries, and Von Tschermak independently came across Mendel's paper and had it republished.

The breeding of plants on a scientific basis dates, therefore, from the discovery of Mendel's Laws of Inheritance in 1900. Forty years is a comparatively short time in the history of agriculture but the results already accomplished by means of scientific plant breeding are great, and we are only upon the threshhold of what really can be accomplished.

Several important varieties of fruit are now on the recommended lists which have been developed as the result of controlled crosses. Peach varieties so developed would include Golden Jubilee, Halehaven, July Elberta, Ambergem, Redhaven, Vedette, Valiant, Dixigem, Dixigold, and many others not so well known. The Stanley prune has become very popular. Many varieties of small fruits have been developed by controlled crosses, including Blakemore, Fairfax, Dorsett, and Catskill strawberries; the Latham, Chief, Taylor, and Milton red raspberries; practically all of the important varieties of the cultivated blueberry with the exception of Rubel; the Fredonia grape, and the Red Lake Currant. Many others of promise cannot be listed in this short article. Slow progress has been made with apples and pears because of the length of time required to test new varieties of these fruits.

The third way in which new fruit varieties originate, sometimes to the great advantage of the fruit industry, is by means of mutations.

In the nucleus of each cell there are small bodies known as chromosomes. The number, size and shape of the chromosomes are the same in all the somatic cells of a given plant, and, with rare exceptions, throughout the whole of the particular species.

Growth takes place by cell division, and during cell division the

Blakemore strawberry — another product of hybridization.

chromosomes also divide in a singularly exact and orderly process. Occasionally, however, for some unknown reason, there is a rearrangement of the chromosomes in a cell. This change in arrangement is carried on in new cells. If a bud should later originate from the area in which the change has taken place, a branch may develop differing in habit of growth, or in the appearance and composition of the fruit.

One August day in 1935, John Nametz, a fruit grower living near Benton Harbor was walking through his Halehaven peach orchard about a week before this variety should be ripe, when he noticed a large limb on one tree loaded with perfectly ripe peaches. The fruits on the rest of the tree were still immature. As an early maturing Halehaven peach would have considerable value, the propagation rights to this limb were purchased by a large nursery company and the new variety patented and released under the name of Early Halehaven.

The Starking apple originated as a mutation of Delicious in much the same way, one limb in a Delicious tree producing apples having much more red color than the original Delicious variety. Many other red strains of certain apple varieties originated as mutations.

Mutations are much more common in fruit trees than was previously thought. Growers are watching for them more than they used to. Most mutations are of no value, but no doubt some new varieties of merit will be discovered in the future as the result of these interesting variations.

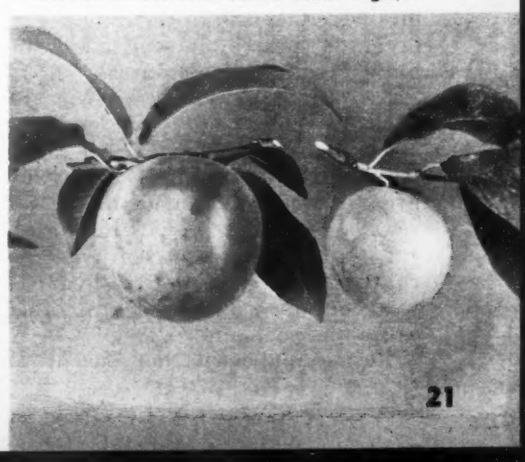
The possibility of improving plants through mutations has so caught the fancy of plant breeders that attempts are being made by the use of X-ray treatments, strong drugs such as colchicine, and other artificial means to bring about chromosome rearrangement and new variations.

The development of improved varieties of the blueberry is an excellent example of what can be done by careful workers using selection and hybridization as working tools. To date no mutations have been found in blueberries but there is every reason to believe that they will be found.

There is much that needs to be done to improve our fruit varieties. No variety is perfect. Each has one or more weaknesses that could be corrected to advantage. The possibilities are excellent for developing varieties having greater hardiness, more resistance to diseases and insects, better flavor, more desirable flesh characteristics for processing, higher vitamin content, and many other improvements.

Great contributions can be made by the plant breeder to all of these problems. It must be realized, however, that improving fruit varieties is slow, patient work. Therefore, variety improvement projects should be set up to continue permanently, or at least for a long period of years. If such projects are set up on a long-time basis and are reasonably well financed they will return a very high rate of interest on the investment financially, and provide the public with better fruit.

Early Halehaven at left. Valuable limb mutation of the Halehaven shown right.



NATIONWIDE FRUITS

APPLES

Potassium Content Analyzed

A lack of sufficient potassium to maintain apple trees in optimum vigor can be shown through potassium analysis of the leaves, according to recent experiments of I. W. Wander at the Ohio Experiment Station in Wooster.

Take Samples from Orchards

After trial work on apple trees in the Experiment Station, leaf samples were taken in thirty commercial orchards located in several of the State's fruit-producing areas.

All samples were composite of leaves from several trees of the same age, the leaves being taken from the mid-portion of the year's growth. Notes were made of the variety, age of trees, previous and present fertilizer treatment, soil type and culture practiced. Any tree obviously weakened by winter injury or other cause was not sampled.

Results indicated that out of 31 Stayman Winesap samples analyzed, only one proved to be low. Of 23 Rome Beauty samples, two showed low potassium contents and of 24 Delicious samples, one was possibly too low from the standpoint of good potassium nutrition.

Since there are so many variables to be considered, one year's data cannot be used as a basis of recommendation. However, it would appear that with several years' observation and determinations (under varying fruit loads, seasons, and other factors) as a background, reliable critical limits for the potassium content of leaves will be established and then can be used as a basis of fertilization and cultural recommendations.

CITRUS

Control of Nitrogen Content

Use of cover crops by citrus growers has assumed new importance in the Western citrus belt where studies have shown that too much nitrogen in the soil may cause poor quality fruit.

Experiments made in Arizona indicate that excess nitrogen may be effectively removed by clipping the cover crop at the height of its growth, and removing the clippings.

Nitrogen fertilizers are commonly applied in the winter to citrus groves, thus maintaining a high level of soil nitrogen.

Nitrogen itself is most important in agricultural fields, but too much nitrogen for citrus fruit should be avoided.

Studies show that too much nitrogen causes grapefruit to mature late, to be high in acid content, low in vitamin C, and to have a thick, rough skin.

Stimulates Tree Growth

Too much nitrogen also stimulates tree growth which may cause trees to bear every other year.

Applying just the right amount of fertilizer in the winter so that no excess develops for summer growth is difficult, the Arizona station has found.

Emphasis is placed on growing perennial grass cover crops—such as Sudan, Johnson or Rhodes—to help regulate nitrogen supply.

Grass clippings must, however, be removed from the grove.

GRAPES

Grapes Grew In Potatoes

Many of California's millions of grape vines owe their existence to a shipload of potatoes with which the forebearers of these vines sailed around the Horn in 1858.

Pierre Pellier, pioneer California viticulturist, had spent four years in Europe selecting wine grape cuttings for his Santa Clara county vineyard.

In 1858 he set out on the return voyage home—his cuttings carefully bundled and stowed aboard the sailing vessel, along with a cargo of potatoes.

During the voyage, the ship's water supply was depleted by hot weather, storms and extended calms.

Desperate for some means of keeping his precious vines alive, Pellier purchased the entire cargo of potatoes and inserted the ends of the vine cuttings into them.

The vines drew on the life-giving moisture in the potatoes and survived the journey around the Horn. They flourished in Pellier's vineyard, and their descendants are still producing grapes.

PEACHES

Prevent Discoloration

The use of ascorbic acid in the processing of peaches is recommended by the North Carolina State College Extension Service.

Ascorbic acid will prevent the discoloration of fruit while in storage and upon thawing, according to scientists at the State College.

This is the recommended preparation of syrup for processing the fruit: Add one level teaspoonful of powdered ascorbic acid to two cups of water, and stir well. Add three cups of sugar, stir until the sugar is dissolved, then chill. This will provide about one quart of syrup for 12 pints of peaches.

Material Easily Accessible

The average druggist or freezer locker operation is in position to supply or obtain powdered ascorbic acid. The acid in tablet form may be used but is more costly.

The appearance and the flavor of fruit treated with ascorbic acid syrup is positively superior to that of fruit frozen in plain syrup.

The most satisfactory produce is obtained if only a few peaches are scalded at a time. After scalding for 30 to 60 seconds, and removing the skins, peaches should be sliced or halved into the syrup immediately in order to prevent darkening.

Pouring syrup over peaches in the Home Economics department of the U. S. Dept. of Agriculture.—U.S.D.A. Photo by Forsythe.

BERRIES

Tying Tool for Berries

When it becomes necessary to remove old canes and tie new canes to trellis wires, blackberry and raspberry growers are usually in for a session of thorn scratches and cuts.

Protection afforded by gloves is offset by the fact that gloves hold thorns and make tying difficult.

The experience of Gray Wood, Pennsylvania grower, may be of help to other growers in alleviating this troublesome duty.

Wood reports that as soon as the fruiting season is over, he cuts out the old canes, using long-handled pruning shears, and draws out the old canes with a long-handled garden rake.

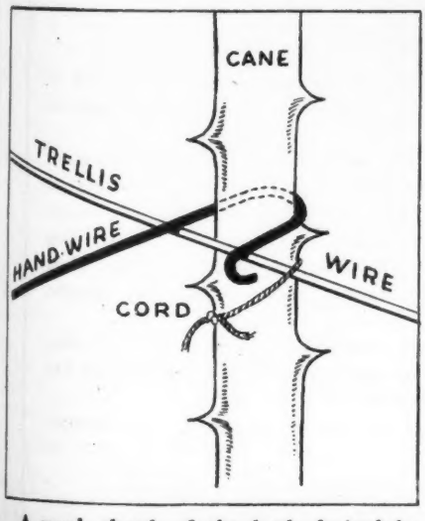
This eliminated preliminary scratches. But the really painful operation is the process of drawing the new cane over to the trellis wire to tie it.

Wood went about eliminating the unpleasantness of the task in earnest.

He took a three foot length of ⅛ inch wire and bent it back about six inches from the end. A hook one and a half inches in diameter was thus formed.

Easy to Make

Placing the short end of the hook in a vise, Wood made a three-quarter inch hook on the small end, completing the tool. (See illustration).



A rough sketch of the hook devised by Mr. Wood. The heavy black line is the wire tool.

To use the tool, the larger hook was placed around a cane, and it was drawn over to the trellis. The small hook was attached to the trellis, and tying was completed without injury to his hands.

The tool is a simple one, and can be made in a few minutes.

STICKNEY STARK
1908—1946

IT was during the summer meeting of the Ohio State Horticultural Society in 1939 that I first met one of those rare personalities who make an indelible impression at first meeting. He was a young fellow who through calm demeanor, extreme intelligence and bubbling enthusiasm held the attention and inquiries of a group of college scientists and well informed growers. Afterwards the two of us sat down for a chat and it wasn't long before I realized why Stickney Stark was held in high esteem by all who knew him.

Stickney decided, long before a lot of us realized it that another war was inevitable and with characteristic decision he joined the United States Navy. And so it was that on December 7, 1941, Ensign Stickney Stark was at Pearl Harbor to do his best against the Jap. Stickney's fellow officers found him to be a fine officer and it was not unusual that he attained the high rank of Lt. Commander—for that was what I like to call the Stickney Stark tradition.

The war ended and Commander Stark was on his way home, back to the life he loved among the nation's fruit growers, when fate cut short his brilliant life in a naval air transport accident.

It was not unusual that his home town and state government honored his passing, for gone was a gentleman whose full promise of a brilliant future had been cut short. We will miss Stickney Stark and perhaps the easiest way to bid him farewell is to run up the naval signal flags from the yardarm, "Well done, Godspeed."

—Edward Meister, Jr., Lt., U.S.N.R.

Plan Short Course In Fruit Growing

A SHORT COURSE in fruit growing, designed to enable orchard foremen, crew bosses, and orchard owners to meet more successfully the problems in fruit work, is planned at the Pennsylvania State College July 29 to August 3. A. L. Beam, director of short courses at the College, is urging early registration, because of housing conditions existing at State College.

Subjects to be covered in the intensive short course will largely be decided by those taking the instruction, Beam revealed. Eight hours each day will be spent in classrooms, laboratories, or the large college orchards.

Among topics covered in last year's short course in fruit growing, also decided by those enrolled, were: fruit varieties, orchard soils and locations, fruit thinning, replanting of trees in old orchards, training young trees, pruning, soil culture and cover crops for the orchards, berry crops, grape growing, fertilizers, diseases and insect controls in the orchard, spraying techniques, fruit storage, and orchard tools.

Persons interested in the short course are urged to write promptly to A. L. Beam, director of short courses, The Pennsylvania State College, State College, Pa., for application, and added details.

A Brief Summary of Post-War Prospects

WITH THIS ISSUE, the AMERICAN FRUIT GROWER sums up what the post-war years hold for the fruit grower, and looks at what the trend may be in the future.

Many technological and scientific advances have been made during the war—so many that it will be decades before science and industry have had ample opportunity to explore and perfect these advances.

Some—as DDT, 666, various hormone sprays and the new weed killers—are already before the public and have been enthusiastically adopted. Many others are just suggestions of what the future holds. Products, tools, and chemicals now being tested all over the country hold great promise. Air transportation is just beginning to come into its own.

The fruit grower has always been ready to adopt new things, and to introduce modern machinery and practice into his methods.

The promise of the future is good. Slowly, a completely new picture will be painted over the industry, customs, and lives of our nation by the wonders of modern science.

We feel sure that the fruit grower will maintain his position at the head of the parade, and come quickly along with the new world of science.

LESSONS IN ORCHARD CHEMISTRY

By E. D. WITMAN, Research Associate

Ohio State University Research Foundation

SYNTHETIC PLANT GROWTH REGULATORS

The term "plant hormone" has been unofficially and perhaps unfortunately adopted to describe a group of chemicals which bring about fundamental changes in the growth of plants when applied in low concentrations.

The subject of regulating plant growth has been under study for a number of years; but only recently have commercial uses been developed. Today, various synthetic organic chemicals are used in weed killers, rooting powders, fruit-setting sprays, and in sprays to delay the Fall drop of apples and pears. They are even used to some extent in producing seedless fruits (of tomato) and promoting early flowering (of pineapple). Researchers have other studies under way, such as blossom thinning, prolonging dormancy, ripening fruit, etc.

For weed killing, 2, 4-D (2, 4-dichlorophenoxy compounds) appears to be most effective. It is best applied when weeds are growing most vigorously. For delaying the Fall drop of apples, alpha naphthalene-acetic acid preparations are used.

The effects of these substances upon plants is regulated by the nature of the chemical, concentration, and rate of application, nature of the plant, condition of plant, atmospheric conditions, and other minor factors.

This field of research is new, and many valuable and fascinating uses are expected to develop as more knowledge is collected.

PREVENT PRE-HARVEST DROP

An apple on the tree is worth a bushel on the ground . . .

SPRAY OR DUST FRUITONE for the best possible control of pre-harvest drop. Fruitone keeps the abscission layer green, holds apples and pears on the trees until they have reached full maturity, size, and color.

For only about 1c a bushel, you get more fruit, of better color, size, and quality; more time to pick; and worthless windfalls will be reduced to the minimum.

For best results it is important to spray Fruitone at the right moment. To help you decide when spraying should be done we have prepared a comprehensive maturity schedule for most varieties of apples and pears. Get your free copy of this schedule *now*. Mail the coupon below.

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1 lb. Dust Fruitone gives same coverage as 10 gals. of Spray Fruitone. ½ lb. Fruitone makes 100 gals. of spray, enough to cover ten average 10-year-old trees, or five average 20-year-old trees.

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Please send me your maturity schedule at once. I have_____apple,_____pear trees, most_____years old. I use spray ☐ dust ☐

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NEW THINGS FOR FRUIT GROWERS

MANUFACTURERS are busy putting out new models to better present ones. Discoveries and improvements made during the war are being converted to civilian uses. A few of the many changes in industrial products are shown and described on these pages. There are many more that are not yet ready for release, or through testing. The AMERICAN FRUIT GROWER will keep up with the new developments in the manufacturing of equipment that will interest fruit growers, and will present the items from time to time. Consult the Directory Section of this issue for names and addresses of manufacturers of new items described here. Or write the AMERICAN FRUIT GROWER, 1370 Ontario Street, Cleveland 13, Ohio, for further information. We are always glad to hear from our readers, and happy to help them.—Editors.

NEW EQUIPMENT

LOW-PRICED WELDER

There has been a need for a low-priced welding outfit for general use on the orchard. The "Fleet-Arc Jr." meets the requirements for such a unit.

It is for 230 volt single phase power lines, and meets the limited input requirements of rural Utilities.

Current range is from 20 amperes at 20 volts to 180 amperes at 25 volts welding duty. This gives sufficient capacity for the type of jobs found on orchards. It will handle electrodes from 1/16" to 5/32" diameter. The unit weighs only 300 pounds, and is easily portable.

ROTOTILLER

This machine prepares the soil for immediate planting by churning and crumbling the ground with steel edge tools that revolve rapidly in paddlewheel fashion.

This produces a more thoroughly worked seed bed in a single operation than is generally obtained by several operations with other tools.

The unit is self-powered and develops 5 horsepower. Two-wheeled, the Rototiller is produced in 20 and 26 inch tillage widths.

In addition to its primary function of tillage, the machine performs more than 20 different tasks. Attachments make it a lawn mower, a field mower, furrower, snow plow, planter, and power take-off to operate circular saws, pumps, grinders, and other machinery.

It is also valuable in preparing seed beds for gardens and plots too small for large equipment.

LIFT TYPE DISC HARROW

This disc harrow can be lifted by directly connected linkage for positive control. The lifting feature permits the harrow to be lifted at the end of a row for turning around, or for transporting over hard roads.

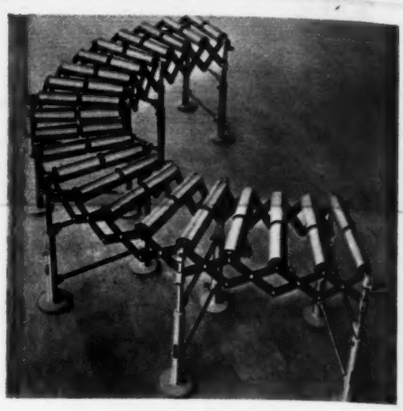
It goes between vineyard rows as shown in the illustration. The rear gang does not bounce because of the rigid frame which is closely connected to the tractor.

Angle adjustment is possible from the driver's seat with the angle selector lever. In low, wet spots where slippage occurs, the harrow may be lifted slightly to give the tractor more traction and reduce the draft.

LIFT TYPE SPRING TOOTH HARROW

A spring tooth harrow has been designed so that it may be hydraulically lifted or lowered for transport or cleaning. This may be done without the driver leaving his seat.

The harrow may be lifted 18 inches off the ground, and saves wear and tear from dragging the harrow as well as the drudgery of lifting the harrow by hand to remove debris which jams the teeth. It is also easier to maneuver in corners.



MUSICAL CONVEYOR

An accordion type portable conveyor is now available for packing houses. The system can be set up by one man, and comes in open lengths of 60 or 100 inches. The sections can be folded like an accordion to 21 or 35 inches. The short section has four telescopic legs, and the longer one has six telescopic legs. These telescoping legs permits the movement of material by gravity alone.

Rollers on the conveyor are split into 10 or 18 inch widths, permitting material traveling down the conveyor to make an S turn without falling off, and without the use of siding.

SELF-LIFTING TRACTOR

A new unit permits a tractor to lift itself for easy tire or tread-width changing. Made of light metal and hydraulically operated, it can be in place and operated in less than two minutes, according to manufacturers. Operation is by fingertip control from the driver's seat.

NEW ORCHARD CHEMICALS

SPRAYING MATERIAL

DDT . . .

a new formulation—four times as effective as the DDT powder now produced is offered by a chemical manufacturer. Called Deetone, it controls aphids and mites as well as other insects killed by normal DDT.

Polon . . .

a selective weed-killer called Polon is recommended for grassy areas, and weeding grain fields. Applied by spraying, the new weed-killer will not harm grasses or crops.

Phygon . . .

a new fungicide to control apple scab is called Phygon, and will also control bitter rot of apples, brown rot of apples and stone fruits, cherry leaf spot, downy mildew on beets and many other plant diseases.

GOOP—A MAGNESIUM DUST

Incorporated with a combination of asphalt and tar, this product was used for incendiary bombs by the Army in the war.

This product has now been adapted to eliminate a problem of long standing to the orchardist—the burning of orchard brush.

Dr. Tukey and Richard Johnson of Michigan State College experimented with the clay-like substance for the purpose of burning brush.

Goop was hard to ignite, but after once started kept burning at a high temperature. This high temperature is important in burning the green brush, which does not burn well at ordinary flame temperatures.

The idea of using Goop to produce heat for orchard heating during low temperature nights is also being investigated by the college.

NEW ITEMS OF GENERAL INTEREST

CANVAS PAINT

A new paint that can be applied to canvas, and will dry in a few hours is available in ten colors, besides black, white, and aluminum.

The paint is a preservative agent, containing a mildew killer which prevents rot and mildew in the dampest climates. It will not stiffen the fabric, will not crack, is water-repellent and sun-resistant.

RADIO FOR RURAL AREAS

A five tube table model with a magnet dynamic speaker is available that will convert to line power with an Electrifier unit supplied by the manufacturer.

The radio also operates on B battery power, and contains several adjustments to save battery power, and to aid tuning. One adjustment allows the power to be lowered when listening to a nearby station, thus saving the battery.

ARO PRESSURE LUBRICATOR

Grease may be pumped from its original 25 pound container without removing the cover with a new pressure lubricator.

Only a few minutes is required to make the lubricator ready for use.

Five thousand pounds of pressure can be developed at normal temperatures with either light or viscous types of lubricants.

INSECT CONTROL DEVICE

Operating from any socket, a new insecticide diffuser forceably expels a mist so fine that it penetrates clothing, under rugs, behind woodwork, and into any place that air reaches.

Called the Difusolier, it is designed for use with a special insecticide called Difuso. Manufacturers claim it is harmless to humans, foods, fabrics and pets.

UTILITY CAN HOOK

A hook designed to fit any can, any ladder, and most receptables is available. It will hang from either side of the ladder, and is useful in painting. The can is positioned in the most convenient place, freeing the hands for work. The ladder may be moved without removing the can.

NEW SPRAY MAST

A new spray mast is being made by the John Bean Mfg. Co. It is designed for two man operation, but is easily converted to one man operation.

The unit may be adapted to any make or model of sprayer. The company is in limited production now, but expects to be in quantity production next year with this product.

NEW PUBLICATIONS

BOOKS

"USDA Manager of American Agriculture" (Price $2.50) by Ferdie Deering is an appraisal of the Department of Agriculture. He presents the riddles and the faults of its organization and administration.

An evaluation of the department's basic policies covers crop control, soil conservation, parity payments, and rural resettlement.

An excellent book by a well-informed agricultural specialist.

"A Living From Bees" (Price $2.25) by Frank C. Pellett is the result of a lifetime of association with bees. The author spent much time as a youngster with his grandfather among the bees.

As a young man he made his livelihood with honey production.

The book explains how a living can be made from the bees, and is profusely illustrated. The author also explains when it is best to keep bees as a sideline rather than an exclusive business.

"Minerals in Agricultural and in Animal Husbandry" is a booklet published by the Manganese Research & Development Foundation.

A complete evaluation of the need for minerals in agriculture, the book classifies minerals which are needed for life, those which are not necessary, but helpful.

A discussion of various animal diseases, and the mineral need that is causing the sickness is included, as well as a discussion of the best methods of giving the minerals to livestock.

Abnormalities of plant growth and the corresponding lack or excess of minerals is shown in a chart included in the pamphlet. A very informative little booklet that is well worth the time to send for it, and the time spent reading it.

EXTENSION SERVICE PAMPHLETS

"Pollination of Tree Fruits and Nuts" is published by the State College of Washington, Agricultural Extension Service, Pullman, Washington.

It is a discussion of the needs and different methods of pollination. The facts of pollination are outlined, and a chart shows fruits which are self-pollinating, and those which are not. In the case of those which are not self-pollinating, the agent for pollination is shown.

A **"How To Pick"** Series has been published by Michigan State College at East Lansing, Michigan. It includes Cherries, Blueberries, Strawberries, Raspberries, and eight other fruits.

The series is designed for workers coming into the State to pick fruit, and is also printed in Spanish for foreign workers.

The series is well illustrated and should be very helpful in orienting unfamiliar workers with the new job. Each fruit is published in a pamphlet of one color, the Spanish and the English version keeping the color scheme.

"Sprinkler Irrigation"—a pamphlet from the State College of Washington again—discusses sprinkler irrigation, and outlines when or where it should be used. Methods of applying this type of irrigation are also described.

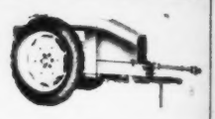
"A Small Business of My Own" ($1.00) by Arthur E. Morgan is the result of many years of careful study and travel by the author.

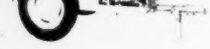
Since many books published tend to steer the young man into a business that is too highly competitive, this author—formerly a college president associated with the work-study plan—took the time to sort out the new opportunities that await enterprising men.

A sound attitude tempers his remarks about agricultural fields, and would aid any young man in his choosing of a vocational field.

BEAN Two-Way Protection

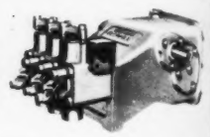
BEAN Power Take-off Sprayers . . . full range of sizes 7 to 35 G.P.M.





BEAN "Little Giant" Duplex Sprayers. 7 G.P.M. at 400 lbs. pressure. 2-cyl. pump.

BEAN "Royal" Pump. Simplest, sturdiest, most efficient spray pump made. Working parts all-enclosed.



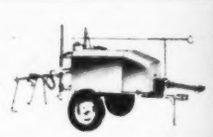
BEAN Orchard Duster mixes its own dust. Most efficient duster made. One compact gear unit.

Protects Your Crop Protects Your Purse

Two-way protection is no idle boast . . . it's a proven BEAN fact. BEAN High Pressures produce more thorough coverage with less material. BEAN Big Capacities enable you to get over your acreage in double-quick time at the critical spraying period. Thus you get best possible protection of your crop and you save on both materials and labor, the two major spraying costs.

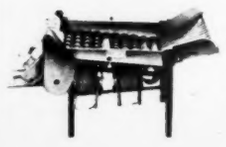
In-built ruggedness insures low-cost operation and low-cost maintenance. That's more purse protection. Moreover, in every BEAN there is the in-built reputation of the John Bean Manufacturing Company . . . unseen . . . but just as real a part of the sprayer as the pump, the engine, or the pressure regulator. For two-way protection that really protects . . . get a BEAN.

BEAN "All-Purpose" Sprayer for row crops and orchard work. 7 G.P.M. at 400 lbs.



BEAN "Junior Duplex" Sprayer. 4 G.P.M. at 400 lbs. For estates, small farms, home orchards, etc.

BEAN 2-Way Fruit Cleaner, a dry cleaner which turns out fruit clean and bright . . . 3 sizes.



BEAN Rubber-Spool Grader for potatoes, onions. Also cleans. Small, light, compact.

JOHN BEAN MFG. CO.

Division of Food Machinery Corporation

15 HOSMER STREET • LANSING, MICHIGAN

104 WEST JULIAN STREET • SAN JOSE, CALIFORNIA

BEAN SPRAYERS for PERFORMANCE and ECONOMY

BUYER'S GUIDE FOR THE FRUIT FARM

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INSECT AND DISEASE CONTROL

DUSTING EQUIPMENT

Dusters

HAND

American Cyanamid & Chemical Corp., Insecticide Dept., New York, N.Y.
John Bacon Co., Gasport, N.Y.
E. C. Brown Co., Rochester, N.Y.
Brown Fence & Wire Co., Cleveland, Ohio
Dobbins Mfg. Co., Elkhart, Ind.
A. B. Farquhar Co., York, Pa.
H. D. Hudson Mfg. Co., Chicago, Ill.
Los Angeles Chemical Co., Los Angeles, Calif.
Lowell Mfg. Co., Chicago, Ill.
Messinger Mfg. Co., Tatamy, Pa.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Nico-Dust Mfg. Co., Los Angeles, Calif.
Naco Mfg. Co., Los Angeles, Calif.
D. B. Smith & Co., Utica, N.Y.
Stauffer Chemical Co., New York, N.Y.
Tyson Orchard Service, Flora Dale, Pa.

LIQUID-DUSTER

Niagara Sprayer & Chem. Co., Inc., Middleport, N.Y.
Naco Mfg. Co., Los Angeles, Calif.

POWER

John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Brown Fence & Wire Co., Cleveland, Ohio
A. B. Farquhar Co., York, Pa.
"Friend" Mfg. Co., Gasport, N.Y.
Howry-Berg Steel & Iron Works, Denver, Colo.
Lowell Mfg. Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Messinger Mfg. Co., Tatamy, Pa.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Naco Mfg. Co., Los Angeles, Calif.
Shunk Mfg. Co., Bucyrus, Ohio
Tyson Orchard Service, Flora Dale, Pa.

Mixers, Dust

Agicide Laboratories, Inc., Racine, Wis.
John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
"Friend" Mfg. Co., Gasport, N.Y.
Messinger Mfg. Co., Tatamy, Pa.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Shunk Mfg. Co., Bucyrus, Ohio

DUSTING MATERIALS

Dust Fillers

Agicide Laboratories, Inc., Racine, Wis.
Calcium Carbonate Co., Chicago, Ill.
Celotex Corp., Chicago, Ill.
France Stone Co., Toledo, Ohio
Gibsonburg Lime Prod. Co., Gibsonburg, Ohio
Ohio Hydrate & Supply Co., Woodville, Ohio
United States Gypsum Co., Chicago, Ill.
Warner Co., Bellefonte Div., Bellefonte, Pa.
Woodville Lime Products Co., Toledo, Ohio

Fluorine Dusts

Aluminum Ore Co., Pittsburgh, Pa.
Chipman Chemical Co., Inc., Bound Brook, N.J.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
Stauffer Chemical Co., New York, N.Y.

Lime

Aluminum Ore Co., Pittsburgh, Pa.
Gibsonburg Lime Products Co., Gibsonburg, Ohio
Kimbalton Lime Co., Inc., Shawsville, Va.
Marble Cliff Quarries Co., Columbus, Ohio
Ohio Hydrate & Supply Co., Woodville, Ohio
Scioto Lime & Stone Co., Delaware, Ohio
Tennessee Corp., Lockland, Ohio
United States Gypsum Co., Chicago, Ill.
Warner Co., Bellefonte Div., Bellefonte, Pa.
Woodville Lime Products Co., Toledo, Ohio
Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

SUPERSPRAY LIME
for dusting and spraying
99.5% minus 325 mesh
Will not cut nozzles
Has good sticking qualities
OHIO HYDRATE & SUPPLY CO.
Woodville, Ohio

Monohydrated Copper Sulphate Dusts

Ansbacher-Siegle Corp., Brooklyn, N.Y.
Chipman Chemical Co., Inc., Bound Brook, N.J.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Phelps Dodge Refining Corp., New York, N.Y
Sherwin-Williams Co., Cleveland, Ohio
Tennessee Corp., Atlanta, Ga.
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

Nicotine Dusts

Ansbacher-Siegle Corp., Brooklyn, N.Y.
California Spray-Chemical Corp., Richmond, Calif. & Elizabeth, N. J.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
E. I. du Pont de Nemours & Co., Inc., R. & H. Chemicals Dept., Pacific Div., El Monte, Calif.
General Chemical Co., New York, N.Y.
Jean Maclean, Bridgeton, Ind.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Nicotine Production Corp., Clarksville, Tenn.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
Tobacco By-Products & Chemical Corp., Louisville, Ky.
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

Pyrethrum Dusts

Ansbacher-Siegle Corp., Brooklyn, N.Y.
Chipman Chemical Co., Inc., Bound Brook, N.J.
Corona Chemical Div. of Pittsburgh Plate Glass Co., Milwaukee, Wis.
General Chemical Co., New York, N.Y.
Kay-Fries Chemicals, Inc., New York, N.Y.
McLaughlin Gormley King Co., Inc., Minneapolis, Minn.
Micronizer Processing Co., Inc., Moorestown, N.J.
Miller Chemical & Fertilizer Corp., Baltimore, Md.
S. B. Penick & Co., New York, N.Y.
B. G. Pratt Co., Hackensack, N. J.
Tyson Orchard Service, Flora Dale, Pa.
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

Rotenone Dusts

Agicide Laboratories, Inc., Racine, Wis.
Carbola Chemical Co., Inc., Natural Bridge, N.Y.
Celotex Corp., Chicago, Ill.
Chipman Chemical Co., Inc., Bound Brook, N.J.
Corona Chemical Div. of Pittsburgh Plate Glass Co., Milwaukee, Wis.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
E. I. du Pont de Nemours & Co., Inc., R. & H. Chemicals Dept., Pacific Div., El Monte, Calif.
General Chemical Co., New York, N.Y.
Jean Maclean, Bridgeton, Ind.
John Lucas Co., Philadelphia, Pa.
Micronizer Processing Co., Inc., Moorestown, N.J.
Miller Chem. & Fertilizer Corp., Baltimore, Md.
National Sulphur Co., Inc., New York, N.Y.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
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General Chemical Co., New York, N.Y.
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Micronizer Processing Co., Inc., Moorestown, N.J.
National Sulphur Co., Inc., New York, N.Y.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
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South Haven Chemical Co., South Haven, Mich.
Stauffer Chemical Co., New York, N.Y.
Tyson Orchard Service, Flora Dale, Pa.
Tennessee Corp., Atlanta, Ga.
Van Waters & Rogers, Inc., Portland, Ore.
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

Tri-Basic Copper Sulphate Dusts

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Corona Chemical Div. of Pittsburgh Plate Glass Co., Milwaukee, Wis.
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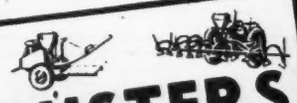

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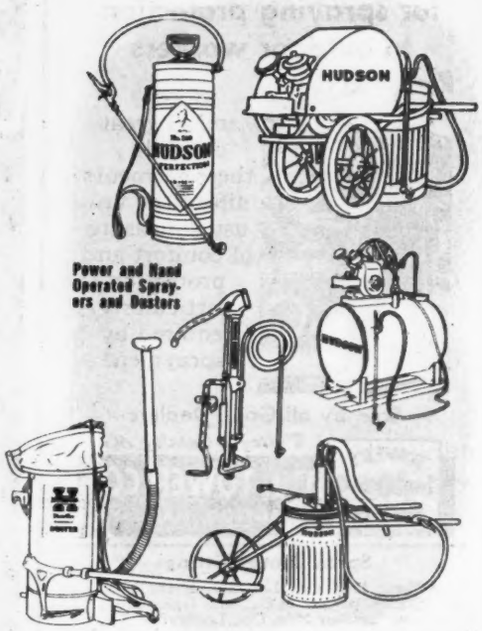


Power and Hand Operated Sprayers and Dusters

Sprayer Equipment

BEARINGS
Hyatt Bearings Division, General Motors Corp., Harrison, N. J.
New Departure Mfg. Co., Bristol, Conn.
SKF Industries, Inc., Philadelphia, Pa.
Timken Roller Bearing Co., Canton, Ohio

ENGINES
John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Briggs & Stratton Corp., Milwaukee, Wis.
J. I. Case Co., Racine, Wis.
Caterpillar Tractor Co., Peoria, Ill.
Continental Motors Corp., Muskegon, Mich.
John Deere, Moline, Ill.
Fairbanks, Morse & Co., Chicago, Ill.
A. B. Farquhar Co., York, Pa.
Field Force Mfg. Co., Pottstown, Pa.
Frick Company, Waynesboro, Pa.
"Friend" Mfg. Co., Gasport, N.Y.
GM, Detroit Diesel Div., Detroit, Mich.
Hardie Mfg. Co., Hudson, Mich.
Hercules Motors Corp., Canton, Ohio
International Harvester Co., Chicago, Ill.
Minneapolis-Moline Power Implement Co., Minneapolis, Minn.
F. E. Myers & Bro. Co., Ashland, Ohio
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Novo Engine Co., Lansing, Mich.
United States Motors Corp., Oshkosh, Wis.
Universal Power Sprayer Co., Inc., Plymouth, Mich.
Waukesha Motor Co., Waukesha, Wis.
Wisconsin Motor Corp., Milwaukee, Wis.

MOTORS, GASOLINE
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Briggs & Stratton Corp., Milwaukee, Wis.
Continental Motors Corp., Muskegon, Mich.
Fairbanks, Morse & Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Hercules Motor Corp., Canton, Ohio
Minneapolis-Moline Power Implement Co., Minneapolis, Minn.
Novo Engine Co., Lansing, Mich.
Seaman Motors Co., Milwaukee, Wis.
Waukesha Motor Co., Waukesha, Wis.
Wisconsin Motor Corp., Milwaukee, Wis.

TANKS AND TANK FILLERS
John Bacon Co., Gasport, N.Y.
John Bean Mfg. Co., Lansing, Mich.
A. B. Farquhar Co., York, Pa.
Field Force Mfg. Co., Pottstown, Pa.
Frick Company, Waynesboro, Pa.
"Friend" Mfg. Co., Gasport, N.Y.
Hardie Mfg. Co., Hudson, Mich.
Kalamazoo Tank & Silo Co., Kalamazoo, Mich.
F. E. Myers & Bro. Co., Ashland, Ohio
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Universal Power Sprayer Co., Inc., Plymouth, Mich.

Valves and Fittings
W. R. Ames Co., San Francisco, Calif.
E. C. Atkins & Co., Indianapolis, Ind.
John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Central Brass Mfg. Co., Cleveland, Ohio
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Metal Mfg. Co., Chicago, Ill.
Crane Co., Chicago, Ill.
Frick Company, Waynesboro, Pa.
"Friend" Mfg. Co., Gasport, N. Y.
B. F. Goodrich Co., Akron, Ohio
F. E. Myers & Bro. Co., Ashland, Ohio
Sprayer Supply Mfg. Co., Grand Rapids, Mich.
Tyson Orchard Service, Flora Dale, Pa.

FARQUHAR IRON AGE YORK, PA.

ORCHARD SPRAYERS

A Size and Type for Every Need

- Ease and economy of operation . . . complete penetration and coverage of foliage are assured when you use Farquhar Iron Age Sprayers and spraying equipment.
- 7 pump sizes . . . the right pump for your sprayer.
- 6 to 40 gallons per minute capacities meet all your needs.
- 500 to 1,000 lbs. per square inch pressure range . . . the exact and constant pressure you require.
- Rugged construction for years of trouble-free operation.
- Simplicity of design for easy lubrication and maintenance.
- Streamlined . . . permits easy passage in rows . . . eliminates twig breakage loss.

FAMOUS IRON AGE PUMP
. . . is totally enclosed with drive gears and bearings running in a bath of oil, assuring long life . . . has an exceptionally high mechanical efficiency, a volumetric displacement efficiency of 99.5 plus.

Write for complete information and catalog today.

Plant and Spray the IRON AGE Way

ROW CROP AND ORCHARD SPRAYERS • AUTOMATIC AND ASSISTED FEED POTATO PLANTERS
VEGETABLE PLANTERS • DUSTERS TRANSPLANTERS • POTATO DIGGERS • WEEDERS

NINETIETH ANNIVERSARY YEAR
1856 A. B. FARQUHAR COMPANY 1946
3425 Duke St., York, Pennsylvania

IDEAL SPRAYER for SMALLER GROWERS

Field Force Tractor Trailer Sprayer 2260-201,
for orchard and row-crops. Especially designed for the not-too-large grower who wants a sprayer of maximum economy and efficiency for his type operation. Quality constructed throughout. Field Force Triplex Pump—Stainless Steel non-magnetic plungers—clear cypress 200 gal. tank—hood-covered working parts—4" steel channel frame, electric welded.
Here is a sound piece of equipment worth investigating. Write for full specifications and name of nearest dealer.

FIELD FORCE MFG. CO.
Pottstown, Pa.

Sprayers

HAND
Armstrong Products Corp., Huntington, W. Va.
Campbell-Hausfeld Co., Harrison, Ohio
Dobbins Mfg. Co., Elkhart, Ind.
A. B. Farquhar Co., York, Pa.
Field Force Mfg. Co., Pottstown, Pa.
Hardie Mfg. Co., Hudson, Mich.
H. D. Hudson Mfg. Co., Chicago, Ill.
Lofstrand Co., Silver Spring, Md.
F. E. Myers & Bro. Co., Ashland, Ohio
Niagara Sprayer & Chem. Co., Middleport, N.Y.
D. B. Smith & Co., Inc., Utica, N.Y.
Sprayer Supply Mfg. Co., Grand Rapids, Mich.

ARMSTRONG SPRAYER

Many Uses in Home, Garden, Orchard

Ideal for garden use, yet has enough force to reach tallest trees from the ground.

EFFICIENT • ECONOMICAL • HANDY

Always ready at a minute's notice—nothing to get out of order. Use this continuous sprayer to spray DDT, exterminate bacteria, insects, bugs, worms, etc., apply whitewash, spray livestock, lawns and barns, extinguish fires.

Sprayer made of brass, 5-gallon knapsack of galvanized iron. Complete with shoulder straps.

At stores or write for circular and price
ARMSTRONG PRODUCTS CORP., Dep. AG, Huntington 12, W. VA

POWER
John Bacon Co., Gasport, N. Y.
John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Dobbins Mfg. Co., Elkhart, Ind.
Eureka Mower Co., Utica, N.Y.
A. B. Farquhar Co., York, Pa.
Field Force Mfg. Co., Pottstown, Pa.
"Friend" Mfg. Co., Gasport, N.Y.
Hardie Mfg. Co., Hudson, Mich.
Lowell Mfg. Co., Chicago, Ill.
F. E. Myers & Bro. Co., Ashland, Ohio
Niagara Sprayer & Chem. Co., Middleport, N.Y.
Stauffer Chemical Co., New York, N.Y.
Universal Power Sprayer Co., Plymouth, Mich.

STATIONARY
John Bean Mfg., Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Field Force Mfg. Co., Pottstown, Pa.
"Friend" Mfg. Co., Gasport, N.Y.
Hardie Mfg. Co., Hudson, Mich.
Lowell Mfg. Co., Chicago, Ill.
F. E. Myers & Bro. Co., Ashland, Ohio
Universal Power Sprayer Co., Plymouth, Mich.

TRACTION
John Bean Mfg. Co., Lansing, Mich.
Eureka Mower Co., Utica, N.Y.
A. B. Farquhar Co., York, Pa.
Field Force Mfg. Co., Pottstown, Pa.
"Friend" Mfg. Co., Gasport, N. Y.
Hardie Mfg. Co., Hudson, Mich.
F. E. Myers & Bro. Co., Ashland, Ohio
Universal Power Sprayer Co., Plymouth, Mich.

Automatic Sprayers

AIR BLAST
Buffalo Turbine Agri. Equip. Co., Inc., Gowanda, N.Y.
F. E. Myers & Bro. Co., Ashland, Ohio.

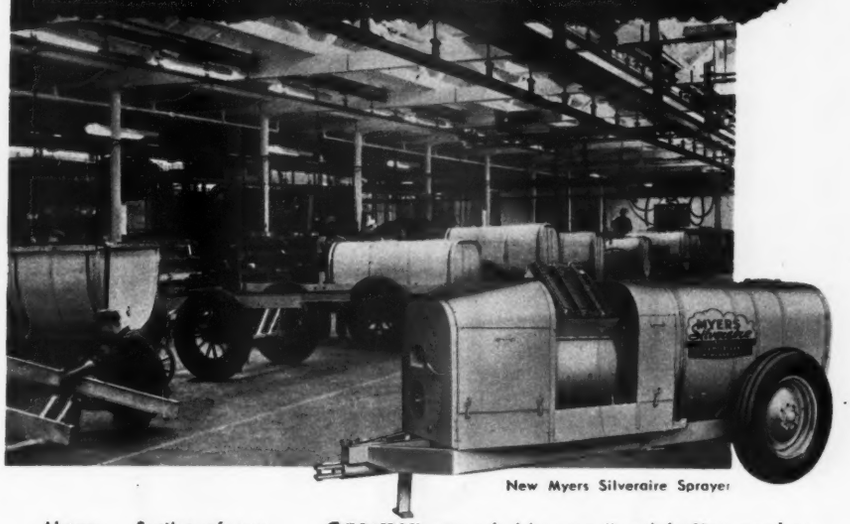
AIRPLANE
Sherwin-Williams Co., Cleveland, Ohio.

FOG MACHINE
Todd Shipyards Corp., New York, N.Y.

MULTIPLE NOZZLE
"Friend" Mfg. Co., Gasport, N.Y.
Hardie Mfg. Co., Hudson, Mich.

SPEED SPRAYER
John Bean Mfg. Co., Lansing, Mich.
Food Machinery Corp., San Jose, Calif.

EXPANDING—to supply MORE MYERS SPRAYERS



New Myers Silveraire Sprayer

Above — Section of new, modernly equipped power sprayer building. Provides more than an acre of floor space for the assembly of Myers Power Sprayers.

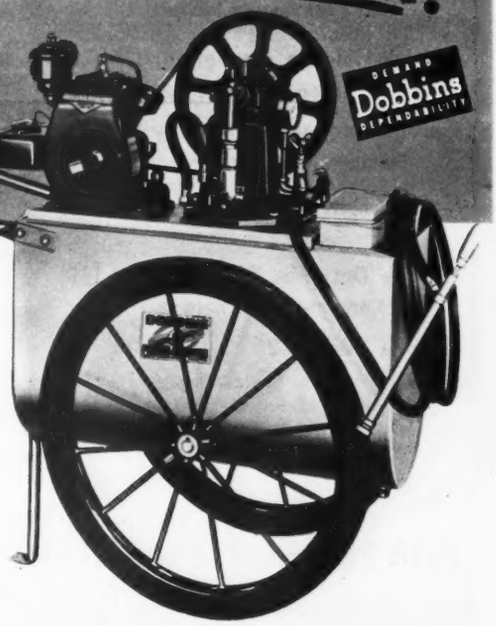
TAKE OFF YOUR HAT TO **MYERS**
WATER SYSTEMS · PUMPS · SPRAYERS · HAY TOOLS

COMING out of this new "straight-line production" plant are Power Sprayers of many types and sizes — as fast as materials can be obtained to build them. More sprayers of highest quality for the season ahead! See the new Silveraire for fast, complete coverage with one-man operation — and inspect the many unusual features of the improved Silver Clouds. Myers makes the sprayer you need — and your Myers dealer offers complete, experienced service.

THE F. E. MYERS & BRO. CO.
Dept. D-86, Ashland, Ohio

Here's EXTRA POWER!

..FOR SPRAYING ORCHARDS BERRY FARMS TRUCK GARDENS AND ESTATES



THE Dobbins *Ereready* Power Sprayer, illustrated, is furnished with either pneumatic or steel-tired wheels. Powered with Briggs & Stratton engine. Here's ample power and capacity to handle the economical application of all spray solutions for the individual owner or small grower! Ideal for spraying whitewash and liquid fertilizer, too. The *Ereready* is lightweight and mobile...especially designed for easy handling and one-man operation. Boom attachment available for farm and garden row crop spraying. See this labor-saving, *dependable* Dobbins Power Sprayer at your friendly Dobbins Dealers. Sold at leading hardware and garden supply stores everywhere.

DOBBINS MANUFACTURING COMPANY
Dept. 706, Elkhart, Indiana

• *Adjustable two-row, four-nozzle boom can be quickly and easily attached to the Dobbins Ereready Power Sprayer for row crop spraying.*

Dobbins Superbilt SPRAYERS · DUSTERS

SEND FOR FREE *Power Sprayer* CATALOG

CORONA PRODUCTS

INSECTICIDES—FUNGICIDES
SEED DISINFECTANTS

Corona Dry Arsenate of Lead (CM-10)
Highest quality product.

Corona Calcium Arsenate - (CM-20)
Excellent for spraying or dusting.

Corona Bordeaux Mixture Dry (CM-30)
Efficient Powder for Spraying.

Corona Dust No. 75 - - - (CM-114)
Contains ¾% Rotenone.

Corona Dust No. 50 - - - (CM-118)
Contains ½% Rotenone.

Corona Dust 40-20 - - - - (CM-119)
Contains 4/10% Rotenone plus 2% Lethane 60*

Corona Dust No. 125 - - - (CM-125)
Contains .12% Pyrethrins.

Corona Fungicide Dust - - (CM-130)
Contains Cuprocide*
(A specially prepared copper dust for plant disease control.)

Corona Fungicide Dust "C-2" - - - - - - - - - - - - - (CM-134-A)
(A specially prepared copper dust for plant disease control containing 20% calcium arsenate.

Corona Micronized† Sulfurs—
Wettable - - - - - - - - - (CM-171)
Dusting - - - - - - - - - (CM-181)
Specially processed sulfurs, extremely fine.

**Reg. U. S. Pat. Office by Rohm & Haas Co.—Philadelphia*
†Reg. U. S. Pat. Office by Micronizer Processing Co.—Moorestown, N. J.

FOR PRICES AND LITERATURE—ASK YOUR DEALER OR WRITE TO

Pittsburgh Plate Glass Company

CORONA CHEMICAL DIVISION
MILWAUKEE (1), WISCONSIN

INSECT AND DISEASE CONTROL

SPRAYING MATERIALS

Arsenicals

CALCIUM ARSENATE

American Agricultural Chemical Co., New York, N.Y.
California Spray-Chemical Corp., Richmond, Calif., and Elizabeth, N.J.
Chipman Chemical Co., Inc., Bound Brook, N.J.
Commercial Chemical Co., Memphis, Tenn.
Corona Chemical Div. of Pittsburgh Plate Glass Co., Milwaukee, Wis.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.
John Lucas & Co., Inc., Philadelphia, Pa.
Niagara Sprayer & Chem. Co., Middleport, N.Y.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
Philipp Bros. Inc., New York, N.Y.
Sherwin-Williams Co., Cleveland, Ohio
Tritox Chemical Co., Washington, Ind.
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

LEAD ARSENATE

American Agricultural Chemical Co., New York. N.Y.
California Spray-Chemical Corp., Richmond, Calif., and Elizabeth, N. J.
Chipman Chemical Co., Inc., Bound Brook, N.J.
Corona Chemical Div. of Pittsburgh Plate Glass Co., Milwaukee, Wis.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York. N.Y.
John Lucas & Co., Inc., Philadelphia, Pa.
Micronizer Processing Co., Inc., Moorestown, N. J.
Niagara Sprayer & Chem. Co., Middleport, N.Y.
Philipp Bros. Inc., New York, N.Y.
Sherwin-Williams Co., Cleveland, Ohio
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

PARIS GREEN

Ansbacher-Siegle Corp., Brooklyn, N.Y.
Chipman Chemical Co., Inc., Bound Brook, N.J.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York. N.Y.
John Lucas & Co., Inc., Philadelphia, Pa.
Philipp Bros. Inc., New York, N.Y.
Sherwin-Williams Co., Cleveland, Ohio
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

ZINC ARSENITE

California Spray-Chemical Corp., Richmond, Calif., and Elizabeth, N. J.
General Chemical Co., New York, N.Y.
Philipp Bros. Inc., New York, N.Y.
Sherwin-Williams Co., Cleveland, Ohio

Copper Compounds

BORDEAUX MIXTURE

American Agricultural Chem. Co., New York, N.Y.
California Spray-Chemical Corp., Richmond, Calif., and Elizabeth, N. J.
Celotex Corp., Chicago, Ill.
Chipman Chemical Co., Inc., Bound Brook, N.J.
Corona Chemical Div. of Pittsburgh Plate Glass Co., Milwaukee, Wis.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
E. I. du Pont de Nemours & Co., Inc., R. & H. Chemicals Dept., Pacific Div., El Monte, Calif.
General Chemical Co., New York, N.Y.
John Lucas & Co., Inc., Philadelphia, Pa.
Niagara Sprayer & Chem. Co., Middleport, N.Y.
Phelps Dodge Refining Corp., New York, N. Y.
Sherwin-Williams Co., Cleveland, Ohio
Tennessee Corp., Atlanta, Ga.
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

Insoluble
(Also known as Fixed Coppers)

American Cyanamid & Chemical Corp., New York, N.Y.
California Spray-Chemical Corp., Richmond, Calif., and Elizabeth, N. J.
Carbola Chemical Co., Inc., Natural Bridge, N.Y.
Chipman Chemical Co., Inc., Bound Brook, N.J.
E. I. du Pont de Nemours & Co., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.
Harshaw Chemical Co., Cleveland, Ohio
Merck & Co., Inc., Rahway, N.J.
Niagara Sprayer & Chem. Co., Middleport, N.Y.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
Röhm & Haas Co., Philadelphia, Pa.
Sherwin-Williams Co., Cleveland, Ohio
Tennessee Corp., Atlanta, Ga.
Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

INSECT AND DISEASE CONTROL

Soluble

COPPER SULPHATE

American Cyanamid & Chemical Corp., New York, N.Y.
Brooklyne Chemical Co., Baltimore, Md.
Carbola Chemical Co., Inc., Natural Bridge, N.Y.
Chipman Chemical Co., Inc., Bound Brook, N.J.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
E. I. du Pont de Nemours & Co., Inc., R. & H. Chemicals Dept., Pacific Div., El Monte, Calif.
General Chemical Co., New York, N.Y.
Harshaw Chemical Co., Cleveland, Ohio
Hercules Powder Co., Inc., Wilmington, Del.
Niagara Sprayer & Chem. Co., Middleport, N.Y.
Phelps Dodge Refining Corp., New York, N.Y.
Philipp Bros. Inc., New York, N.Y.
Stauffer Chemical Co., New York, N.Y.
Tennessee Corp., Atlanta, Ga.
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

Cryolite

Aluminum Ore Co., Pittsburgh, Pa.
California Spray-Chemical Corp., Richmond, Calif., and Elizabeth, N. J.
Chipman Chemical Co., Inc., Bound Brook, N.J.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
Stauffer Chemical Co., New York, N.Y.

Dinitro Compounds

Chipman Chemical Co., Inc., Bound Brook, N.J.
California Spray-Chemical Corp., Richmond, Calif. & Elizabeth, N. J.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Sherwin-Williams Co., Cleveland, Ohio
Standard Agricultural Chemicals, Inc., Hoboken, N.J.

Ethylene Dichloride

Carbide & Carbon Chemicals Corp., New York, N. Y.
Dow Chemical Co., Midland, Mich.
General Chemical Co., New York, N.Y.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Philipp Bros. Inc., New York, N.Y.
Westvaco Chlorine Products Corp., New York, N.Y.
Woolfolk Chemical Wks. Ltd., Ft. Valley, Ga.

Fixed Nicotine

E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del
General Chemical Co., New York, N.Y.
Miller Chemical & Fertilizer Corp., Baltimore, Md.
Tobacco By-Products & Chemical Corp., Louisville, Ky.

Black Leaf 155

TOBACCO BY-PRODUCTS & CHEMICAL CORP.
INCORPORATED • LOUISVILLE, KENTUCKY

Fluorine Compounds

Aluminum Ore Co., Pittsburgh, Pa.
American Cyanamid & Chemical Corp., Insecticide Dept., New York, N.Y.
Chipman Chemical Co., Inc., Bound Brook, N.J.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
Philipp Bros. Inc., New York, N.Y.
Stauffer Chemical Co., New York, N.Y.

Lime

Celotex Corp., Chicago, Ill.
General Chemical Co., New York, N.Y.
Gibsonburg Lime Products Co., Gibsonburg, Ohio
Kimbalton Lime Co., Inc., Shawsville, Va.
Marble Cliff Quarries Co., Columbus, Ohio
National Gypsum Co., Buffalo, N. Y.
Ohio Hydrate & Supply Co., Woodville, Ohio
Philipp Bros. Inc., New York, N.Y.
Scioto Lime & Stone Co., Delaware, Ohio
United States Gypsum Co., Chicago, Ill.
Warner Co., Bellefonte Div., Bellefonte, Pa.
Woodville Lime Products Co., Toledo, Ohio
Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

I've beaten the build-up—

"I'm strong for theory, but in spraying I'm all for practice. Take codling moth and red mite control, for instance. A few years ago these pests were building up rapidly against our accepted spray practice. Then we strengthened up with ORTHOL-K and Black Leaf '40' and Black Leaf '155'. Looks like they've taken the count for keeps now — thanks to the help given us by our ORTHO fieldman."

ORTHOL-K

TRADE NAMES REG. U.S. PAT. OFF.

PHYTONOMIC SUMMER OIL

WITH BLACK LEAF "40" AND BLACK LEAF "155"

SMOTHERS EGGS
STRENGTHENS POISON
KILLS ADULTS BY CONTACT

COMPLETE SPRAY PROGRAMS

ORTHO
SCIENTIFIC PEST CONTROL

FOR ALL FRUITS— ALL CONDITIONS

CALIFORNIA SPRAY-CHEMICAL CORPORATION
RICHMOND, CALIFORNIA — ELIZABETH, NEW JERSEY

SPECIALISTS IN
DDT
and
PYRETHRUM
INSECTICIDES
Better Insecticides
McLAUGHLIN GORMLEY KING CO.
Makers of Insecticides • Founded 1902
MINNEAPOLIS, MINNESOTA

A PROVEN
KILLER of
PEACH TREE BORER!
Para-dichlorobenzene has long been recommended by the U. S. Dept. of Agriculture and leading fruit growers as a *proven* killer of the peach tree borer. It destroys the borer's larvae without harm to the tree . . . is easy to apply . . . requires no special equipment . . . no mixing.
SOLVAY
PARA-DICHLOROBENZENE
SOLVAY SALES CORPORATION
Alkalies and Chemical Products Manufactured by The Solvay Process Company
40 RECTOR ST., NEW YORK 6, N. Y.

Nicotine Sulphate

American Nicotine Co., Henderson, Ky.
California Spray-Chemical Corp., Richmond, Calif., & Elizabeth, N. J.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.
James Good Co., Philadelphia, Pa.
Kay-Fries Chemicals, Inc., New York, N.Y.
Niagara Sprayer & Chem. Co., Middleport, N.Y.
Nico-Dust Co., Los Angeles, Calif.
Nicotine Production Corp., Clarksville, Tenn.
Philipp Bros. Inc., New York, N.Y.
B. G. Pratt Co., Hackensack, N. J.
Sherwin-Williams Co., Cleveland, Ohio
Tobacco By-Products & Chemical Corp., Louisville, Ky.
United States Gypsum Co., Chicago, Ill.
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

"Black Leaf 40"
TOBACCO BY-PRODUCTS & CHEMICAL CORP.
INCORPORATED LOUISVILLE, KENTUCKY

Oils

EMULSIONS AND MISCIBLE OILS—

Summer Oils, Dormant Oils, Tar Emulsions

Archer-Daniels-Midland Co., Minneapolis, Minn.
California Spray-Chemical Corp., Richmond, Calif., & Elizabeth, N. J.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.
James Good Co., Philadelphia, Pa.
Gulf Refining Co., Pittsburgh, Pa.
Miller Chem. & Fertilizer Corp., Baltimore, Md.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
B. G. Pratt Co., Hackensack, N. J.
Schaeffer Bros. & Powell Mfg. Co., St. Louis, Mo.
Shell Oil Co., Inc., New York, N.Y.
Sherwin-Williams Co., Cleveland, Ohio
Silmo Chemical Co., Inc., Vineland, N.J.
Socony-Vacuum Oil Co., New York, N.Y.
Standard Agricultural Chemicals, Inc., Hoboken, N.J.
Standard Oil Co. of Indiana, Chicago, Ill.
Sun Oil Co., Philadelphia, Pa.
Woolfolk Chemical Wks., Ltd., Ft. Valley, Ga.

Organic Compounds—Insecticides

DDT (Dichlorodiphenyltrichloroethane)

Agicide Laboratories, Inc., Racine, Wis.
American Cyanamid & Chemical Corp., New York, N.Y.
American Home Products, Marietta, Ohio
J. C. Baker Chemical Co., Phillipsburg, N.J.
Boyle Midway, Inc., New York, N.Y.
Carbola Chemical Co., Inc., Natural Bridge, N.Y.
Chipman Chemical Co., Inc., Bound Brook, N.J.
Cincinnati Chemical Works, Inc., Cincinnati, Ohio
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
Geigy, Inc., New York, N.Y.
General Chemical Co., New York, N.Y.
Hercules Powder Co., Wilmington, Del.
Hooker Electro Chemical Co., Niagara Falls, N.Y.
Interstate Chemical Mfg. Co., Reading, Pa.
Kolker Chemical Works, Newark, N.J.
McLaughlin Gormley King Co., Minneapolis, Minn.
Merck & Co., Rahway, N.J.
Michigan Chemical Co., St. Louis, Mich.
Miller Chem. & Fertilizer Corp., Baltimore, Md.
Monsanto Chemical Co., St. Louis, Mo.
Niagara Sprayer and Chem. Corp., Middleport, N.Y.
S. B. Penick & Co., New York, N.Y.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
Philipp Bros. Inc., New York, N.Y.
John Powell & Co., Inc., New York, N.Y.
B. G. Pratt Co., Hackensack, N.J.
R. J. Prentiss & Co., Inc., New York, N.Y.
Röhm & Haas Co., Philadelphia, Pa.
Sherwin-Williams Co., Cleveland, Ohio
Standard Oil Co. of Indiana, Chicago, Ill.
Stauffer Chemical Co., New York, N. Y.
U. S. Rubber Co., Naugatuck, Conn.
Westvaco Chlorine Products Corp., New York, N.Y.

"666" (Hexachlorocyclohexane)

Commercial Solvents Corp., New York, N.Y.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
Monsanto Chemical Co., St. Louis, Mo.

PHENOTHIAZINE

E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.

XANTHONE

E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.

CONTROL PEACH BORERS WITH PARA-SCALECIDE

THOUSANDS of growers all over the country have proved that Para-Scalecide — a liquid method of applying paradichlorobenzene — is the safest, easiest and most effective way to control peach borers. It does a better job than the old crystal method — and with far less labor and time.

Para-Scalecide is simply diluted with water and poured against the base of the tree. A few shovelfuls of earth are then thrown against the base to hold the fumes.

Para-Scalecide is applied in the Fall or Spring, while the ground temperature is 60 degrees or warmer. One gallon of Para-Scalecide treats 42 full-grown trees or 128 two-year-old trees.

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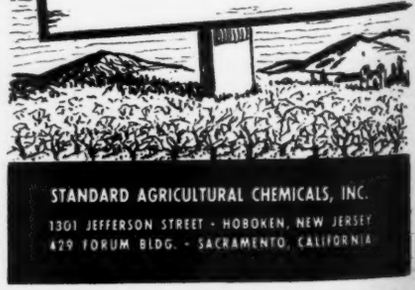

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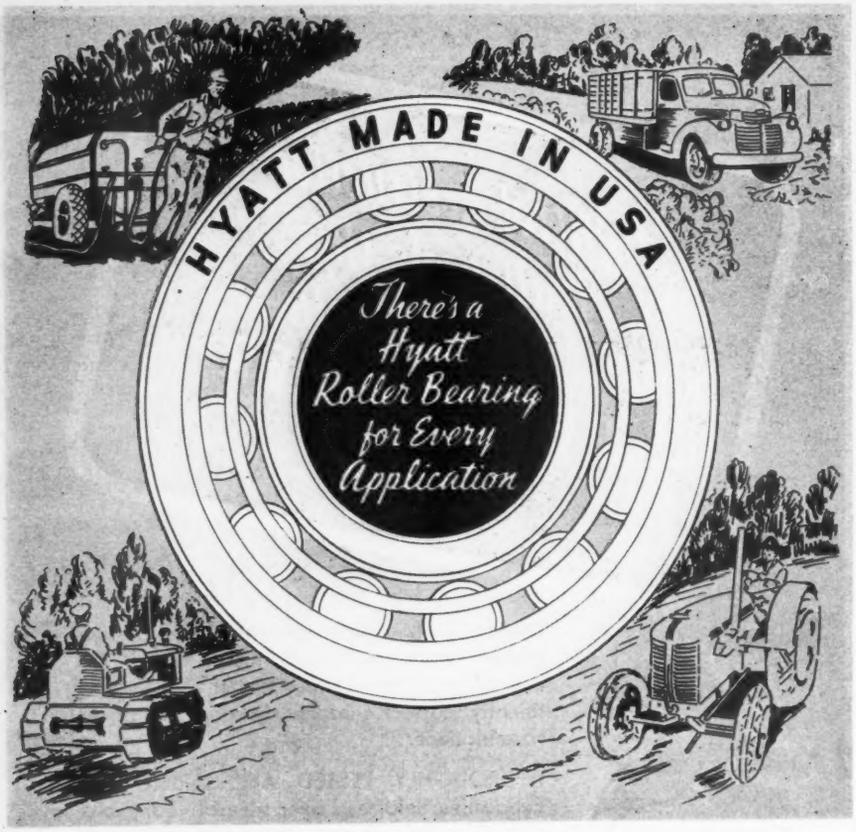

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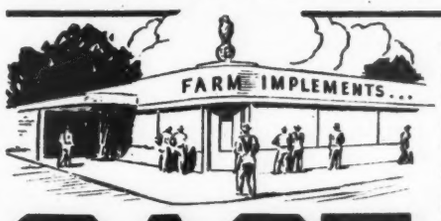

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AN APPLE A DAY

● If you could prevent one premature apple drop daily through proper use of *Niagara Stik* . . . the anti-drop apple spray . . . you would greatly increase profits! *Niagara Stik* prevents chemical changes in the cell walls of fruit stems, thus stopping abscission. This results in the apples staying on the trees until ready for harvest. Increase the yield of choice fruit and add to your profits by using *Niagara Stik*. It's economical too: it costs less than two cents per bushel harvested.

For detailed information, write to:

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SPRAY OR DUST BY PLANE

...VE YOUR CROP

From Premature Dropping of Apples

If you operate large acreage, it will pay you to investigate airplane application of Sherwin-Williams STOP-DROP, in spray or dust form, as a faster way to prevent premature dropping of apples.

A revolutionary Sherwin-Williams research development, spraying or dusting from the sky has been effectively demonstrated on a big scale in the apple growing areas of the Pacific Northwest and other parts of the country.

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When spraying or dusting from the sky, the turbulence set up by the propeller of the plane causes the Sherwin-Williams STOP-DROP spray or dust to cover the fruit completely, in spite of heavy foliage.

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For Prompt Delivery Place Orders Early.

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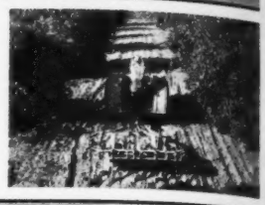
TILLAGE EQUIPMENT

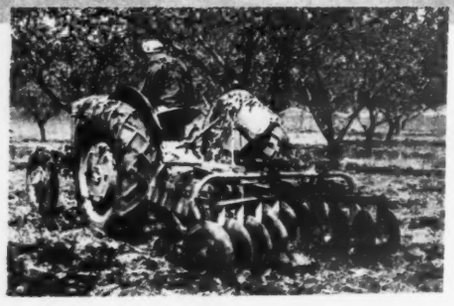


NOW you can have a *Lift-Type* TANDEM DISC HARROW

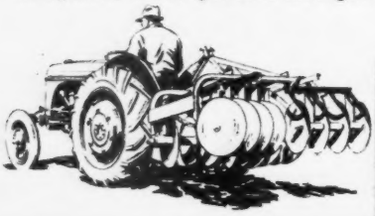
that raises for turning or getting into tight spots

for your
FORD TRACTOR

Made in 5', 6½' and 8' widths to fit your needs. Hydraulic control of the tractor is used in regulating depth and holding harrow firmly to the ground.



● Yes, sir, it's a full-size Tandem Disc that raises for transport or turning at end of rows or crossing headlands. Is lowered into exact position for working around trees, between narrow rows or in tight places. Harrow is held firmly to the ground by tractor linkage without bouncing. On light sandy soils, depth can be controlled so that harrow is partly carried, giving added traction. Just the disc for nurseries, orchards, vineyards, truck gardens and general farming.



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New Anderson Master Hoe

Makes in-and-out hoeing easy. Time and back saving answer for hoeing and grubbing between vines, trees, and bushes. Does the job where the ordinary cultivator won't reach.

Developed in the heart of America's grape and fruit belt. The new Anderson Master Hoe will keep your row crops in better condition than any other implement. Use it for cultivating your grapes, raspberries, currants, blueberries, and trees. Ideal for nurseries. All Steel Constructed.

Both "Pulling-away" and "Push-up" blade included as standard equipment.

American & Canadian Patents.

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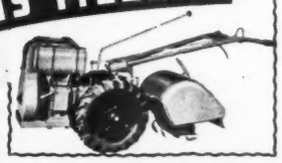

THE most complete line of tillage equipment in the world. Capacities from 14 inches to 7 feet cutting widths, including the Ariens Tractortiller, decidedly an implement for fruit growers.

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Made by OTTAWA Mfg. Co.
Our 42nd Year

Higher Lifting
Quicker Loading
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Larger Scoop
For
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NOW—

you can get the New Improved BULL-DOG Tractor Lift direct from the factory... no dealer profits for you to pay. Latest hydraulic engineering features. Saves thousands of man-power hours on the farm, parks, highways. Makes fast, easy moving of dirt, gravel, sand, manure, bales, barrels, machinery, etc. Built for commercial use, yet priced within reach of any farmer.

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NO DUMPING—Loads easily, quickly pushed off at maximum or other heights by hydraulic ram — places load where wanted—no guesswork. Also bucks hay to stack, baler or barn. Complete unit or as an extra with BULL-DOG Lift. Take care of your hay crop when it is ready to harvest—no delays waiting for help. Low in price. Write for details. Fully guaranteed.

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CUTS CLOSE TO TREES...

HERE'S the perfect mower for groves and orchards! With the self-propelled JARI POWER SCYTHE, you can cut weeds and grass close to trees and posts, and under fences, shrubbery and in tight corners.

Easy to handle, the rugged, fast-cutting JARI mows 4 to 6 acres in 8 hours. Cuts 1½" from the ground with a wide 36" sicklebar. Its stable, "3-point contact" and 2-wheel balance gives you a fast, smooth job on steep slopes or rough ground. Easily portable . . . economical . . . built for years of dependable service.

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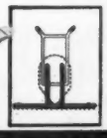

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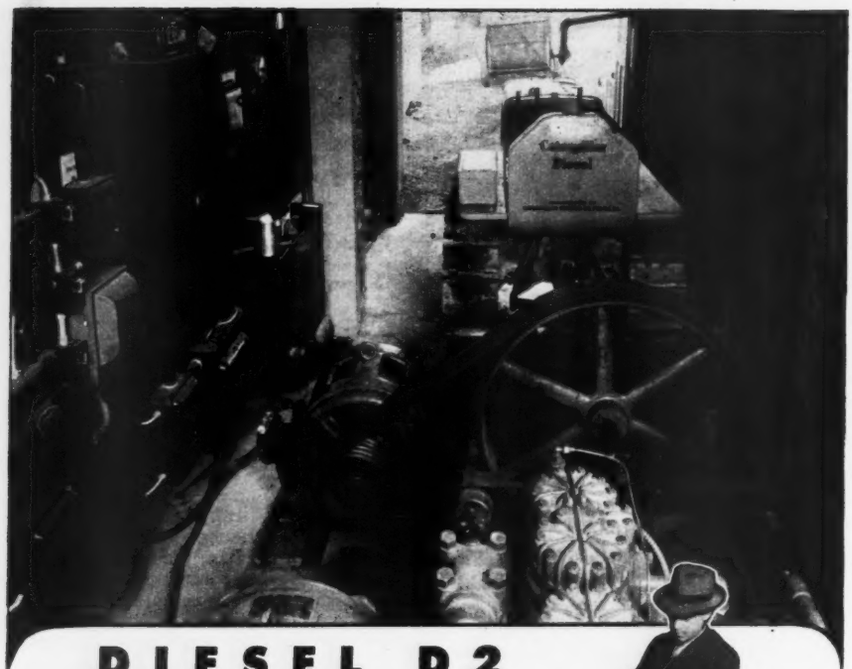

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Saves $900 per year

—for Wm. F. Haas, Overlook Orchards, Coplay, Pa.!

"I do not think of my D2 as a tractor," declares Mr. Haas. "It is my portable power plant!"

This "Caterpillar" Diesel D2 Tractor's hour meter shows that it has worked 14,175 hours—since it went to work in October, 1939, for Wm. F. Haas, Overlook Orchards, Coplay, Pa. And Mr. Haas' books show that his D2 saves him $900.00 per year compared with the cost of gasoline and electric power he otherwise would require. That totals over $5400.00 to date.

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Repairs Rake in 40 Minutes

The cross member of this rake (pictured below) cracked at the hitch riveted connection due to twisting. The crack was welded and a reinforcing bar welded to the angle as shown. You can do hundreds of jobs like this . . . save crops, time and money.

Write for Bul. 365 today

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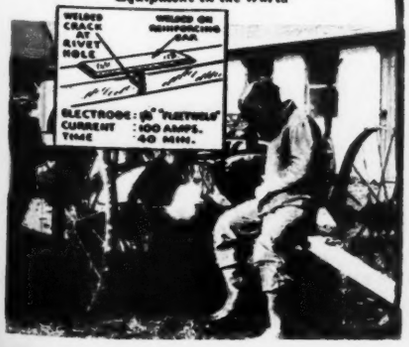
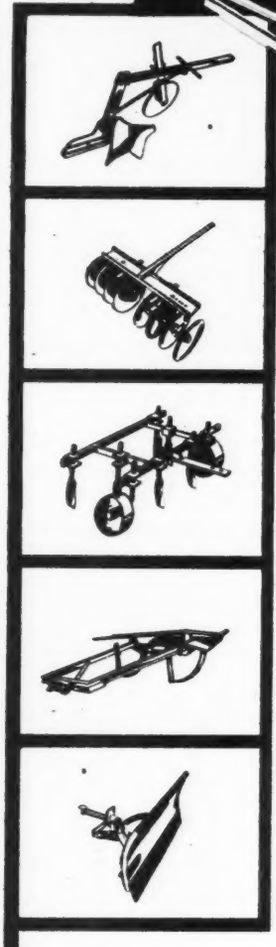
Largest Manufacturer of Arc Welding Equipment in the World



TOUGH GROUND DOESN'T DISCOURAGE A BREADY



BREADY

FRONT-HITCH

GARDEN TRACTORS

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DISCS
HARROWS
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PLOWS SNOW
CUTS WEEDS

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Mantle & Mantle, Painesville, Ohio

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Crane Co., Chicago, Ill.
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White Showers, Inc., Detroit, Mich.

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Broadway Rubber Mfg. Co., Louisville, Ky.
Electric Hose & Rubber Co., Wilmington, Del.
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B. F. Goodrich Co., Akron, Ohio
Quaker Rubber Corp., Philadelphia, Pa.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, Ohio
U. S. Rubber Co., New York, N. Y.

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Champion Corp., Hammond, Ind.
Chase Brass & Copper Co., Waterbury, Conn.
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FRUIT PICKER

makes easy picking of hard-to-reach, scattered fruit — no climbing—no damage to fruit or small twigs. Made of sturdy steel wire, heavy cloth bag and 6 ft. basswood handle. 6 ft. extension at slight additional cost. Only $2.25 each, express collect.

SCHAEFER MFG. CO., Box 285, Fort Wayne, Ind.

"Wenatchee" PATENTED **FRUIT PICKING BAGS**

SAVE Fruit!

LESS **LABOR**
MORE **PROFITS**

Handy Wenatchee Fruit Picking Bags permit more freedom of action and make the job less tiresome. They pay for themselves many times over in a single harvest.

PREVENT BRUISES and STEM PUNCTURES!

The Wenatchee Fruit Picking Bag has an endless steel frame to keep bag open for easy access. For tender fruits it adjusts to half bushel capacity and opens to full bushel size as needed. Empties from the bottom with "E-Z OFF" snap. Fits body comfortably, has wide adjustable web suspenders and is reinforced with leather at points of wear.

WRITE US TODAY
for prices, giving dealer's name

SCHEFFER & ROSSUM CO.
MANUFACTURERS ST. PAUL 1, MINN.

"Wenatchee" PATENTED **FRUIT PICKING BAGS**

STANDARD PORTABLE PILERS MAKE EVERY INCH OF STORAGE SPACE HANDY

The HANDIPILER

Loads, unloads, elevates, stacks—handles cartons, bags, other packages up to 100 lbs. Light weight. Completely portable and self-contained. Available in four heights; adjustable up to 7-½, 8-½, 9-½ and 10-½ ft.; in two widths with 14 inch and 24 inch belt.

The HANDIBELT

An all purpose incline, decline or horizontal belt portable conveyor. Handles boxes, cartons, crates, bags. Either end may be raised or lowered. Elevates from 10 inches to 6 feet 3 inches, or from 30 inches to 7 feet 6 inches or any angle between.

For complete information write for Bulletin AFG-76

STANDARD CONVEYOR COMPANY
North St. Paul 9, Minnesota

It's wise to CONVEYORIZE

SEND FOR YOUR FREE CATALOG

Catalog contains information on construction features and uses of Rapid Wheel Gravity Conveyors together with complete specifications and data on standard accessories . . . also shows on-the-spot photos of Rapid Wheel Gravity Conveyors in action on all types of conveying jobs.

Rapid Wheel Conveyors speed and ease handling. Portable and lightweight, they may be set up or dismantled in minutes. Manufactured in standard lengths of 5 and 10 feet and in widths of 12 and 18 inches.

It's wise to Conveyorize! You can save time, money and manpower on your package handling operations. . . . Send for free copy today!

Offices in Principal Cities
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364 Peoples National Bank Bldg.,
GRAND RAPIDS 2, MICHIGAN

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Box Making Machinery
Cobden Machine Works, Cobden, Ill.
William S. Doig, Inc., Brooklyn, N.Y.
Food Machinery Corp., Riverside, Calif.
Morgan Machine Co., Inc., Rochester, N.Y.
Parker Mfg., Co., Winthrop, Wash.
Saranac Machine Co., Benton Harbor, Mich.
Wells & Wade, Wenatchee, Wash.

Bagging Machines
Hampshire Implement Co., Hatfield, Mass.

Basket Making Machinery
Cobden Machine Works, Cobden, Ill.
Saranac Machine Co., Benton Harbor, Mich.

Belt Lacing
Armstrong-Bray & Co., Chicago, Ill.
Detroit Belt Lacer Co., Detroit, Mich.
Flexible Steel Lacing Co., Chicago, Ill.

Brushes
American Brush Co., Portland, Ore.
John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Brogdex Co., Pomona, Calif.
Fred A. Durand, Woodbury, Ga.
Food Machinery Corp., Riverside, Calif.
"Friend" Mfg. Co., Gasport, N. Y.
Fuller Brush Co., Hartford, Conn.
Trescott Co., Inc., Fairport, N.Y.
Wayland Machinery Co., Covesville, Va.
Wolfe Brush Co., Pittsburgh, Pa.
Wooster Brush Co., Wooster, Ohio

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American Chain Div., American Chain & Cable Co., Inc., Bridgeport, Conn.
Baldwin-Duckworth, Div. of Chain Belt Co., Springfield, Mass.
Chain Belt Co., Milwaukee, Wis.
Diamond Chain & Mfg. Co., Indianapolis, Ind.
H. D. Hudson Mfg. Co., Chicago, Ill.
Link-Belt Co., Chicago, Ill.
Locke Steel Chain Co., Bridgeport, Conn.
Parma Water Lifter Co., Parma, Idaho
Standard Conveyor Co., N. St. Paul, Minn.

Cleaners and Polishers
George G. Bates, Kingston, N.Y.
John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Brogdex Co., Pomona, Calif.
Champion Grader & Mfg. Co., Berwyn, Ill.
Fred A. Durand, Woodbury, Ga.
Everedy Machine Co., Inc., Philadelphia, Pa.
Food Machinery Corp., Riverside, Calif.
"Friend" Mfg. Co., Gasport, N.Y.
F. F. Leach Machine Shop & Foundry, Hartford, Mich.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
The Taylor Grader, Anna, Ill.
Trescott Co., Inc., Fairport, N.Y.
Tyson Orchard Service, Flora Dale, Pa.
Wayland Machinery Co., Covesville, Va.

Facers, Basket
John Bacon Co., Gasport, N.Y.
Continental Paper Products Co., Denver, Colo.
F. D. Croce & Co., Inc., New York, N. Y.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
B. F. Goodrich Co., Akron, Ohio
Rice, Trew & Rice Co., Inc., Biglerville, Pa.
Simplex Paper Corp., Adrian, Mich.
Tyson Orchard Service, Flora Dale, Pa.
Webster Basket Co., Webster, N.Y.

Facers, Box
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The most profitable way to market fruit is to own a
Bates Fruit Sizer, Cleaner and Polisher
The only patented and padded machine manufactured to protect delicate fruit from bruising. Unable to supply the trade. Will welcome correspondence from other manufacturers.
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George G. Bates, Kingston, N.Y.
John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Brogdex Co., Pomona, Calif.
Champion Grader & Mfg. Co., Berwyn, Ill.
Fred A. Durand, Woodbury, Ga.
Food Machinery Corp., Riverside, Calif.
"Friend" Mfg. Co., Gasport, N.Y.
Ideal Grader & Nursery Co., Hood River, Ore.
F. F. Leach Machine Shop & Foundry, Hartford, Mich.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
The Taylor Grader, Anna, Ill.
Trescott Co., Inc., Fairport, N.Y.
Tyson Orchard Service, Flora Dale, Pa.
Wayland Machinery Co., Covesville, Va.

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ECONOMICAL TO BUY . . . ECONOMICAL TO USE
Growers using compact, sturdy Taylor Graders report that each will grade more than 1000 bushels a day. Another Taylor feature: combination apple and peach grader.
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For PEACHES AND APPLES

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John Bean Mfg. Co., Lansing, Mich.
Continental Paper Products Co., Denver, Colo.
F. D. Croce & Co., Inc., New York, N. Y.
William S. Doig, Inc., Brooklyn, N.Y.
Food Machinery Corp., Riverside, Calif.

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John Bacon Co., Gasport, N.Y.
Burch Mfg. Co., Lawrence, Mich.
Continental Paper Products Co., Denver, Colo.
F. D. Croce & Co., Inc., New York, N. Y.
Frank L. Deaner & Son, Benton Harbor, Mich.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Rice, Trew & Rice Co., Inc., Biglerville, Pa.
The Taylor Grader, Anna, Ill.
Tyson Orchard Service, Flora Dale, Pa.
Webster Basket Co., Webster, N.Y.

Packing Tables
Bean-Cutler Div., F.M.C., San Jose, Calif.
Brogdex Co., Pomona, Calif.
Food Machinery Corp., Riverside, Calif.
"Friend" Mfg. Co., Gasport, N.Y.
Ideal Grader & Nursery Co., Hood River, Ore.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
The Taylor Grader, Anna, Ill.

Presses, Basket
Fruit Package Equipment Co., Swoope, Va.

Presses, Box
John Bean Mfg. Co., Lansing, Mich.
F. D. Croce & Co., Inc., New York, N. Y.
Parker Machine Works, Riverside, Calif.

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John Bacon Co., Gasport, N.Y.
F. A. Read, Inc., Albion, N.Y.
Salt Lake Stamp Co., Salt Lake City, Utah
Tyson Orchard Service, Flora Dale, Pa.
Webster Basket Co., Webster, N.Y.

Conveyors
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John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Food Machinery Corp., Riverside, Calif.
"Friend" Mfg. Co., Gasport, N.Y.
Mathews Conveyer Co., Ellwood City, Pa.
Link-Belt Co., Chicago, Ill.
Rapids-Standard Co., Grand Rapids, Mich.
Standard Conveyor Co., N. St. Paul, Minn.
Trescott Co., Inc., Fairport, N.Y.

Power
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Materials Movements Industries, Chicago, Ill.
Mathews Conveyer Co., Ellwood City, Pa.
Rapids-Standard Co., Grand Rapids, Mich.
Standard Conveyor Co., N. St. Paul, Minn.
Trescott Co., Inc., Fairport, N.Y.

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Exact Weight Scale Co., Columbus, Ohio
Fairbanks, Morse & Co., Chicago, Ill.
Howe Scale Co., Rutland, Vt.

Sorters, Berry

The Taylor Grader, Anna, Ill.

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Bean-Cutler Div., F.M.C., San Jose, Calif.
Brogdex Co., Pomona, Calif.
Fred A. Durand, Woodbury, Ga.
Food Machinery Corp., Riverside, Calif.
"Friend" Mfg. Co., Gasport, N.Y.
Fruit Packing Equipment Co., Swoope, Va.
Ideal Grader & Nursery Co., Hood River, Ore.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Parma Water Lifter Co., Parma, Idaho
The Taylor Grader, Anna, Ill.
Wayland Machinery Co., Covesville, Va.

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Broadway Rubber Co., Louisville, Ky.
Faultless Rubber Co., Ashland, Ohio
Kent Mfg. Co., Grand Rapids, Mich.
Sponge Rubber Products Co., Derby, Conn.
United States Rubber Co., New York, N. Y.

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Bostitch, Inc., East Greenwich, R. I.
Cobden Machine Works, Cobden, Ill.
F. D. Croce & Co., Inc., New York, N. Y.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Markwell Mfg. Co., Inc., New York, N.Y.
Speed Products Co., Long Island City, N. Y.
Saranac Machine Co., Benton Harbor, Mich.

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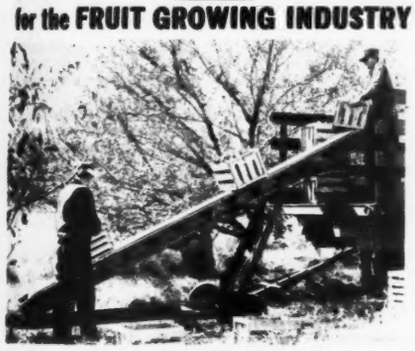
American Steel & Wire Co., Cleveland, Ohio
Brown Fence & Wire Co., Cleveland, Ohio
F. D. Croce & Co., Inc., New York, N. Y.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Markwell Mfg. Co., Inc., New York, N.Y.
Republic Steel Corp., Cleveland, Ohio
Pittsburgh Steel Co., Pittsburgh, Pa.
Tyson Orchard Service, Flora Dale, Pa.

HERE'S THE IDEAL CONVEYOR for the FRUIT GROWING INDUSTRY



The TOTE-ALL Portable Power Conveyor! It's speedy, lightweight and versatile, and the only conveyor that handles *both* package and bulk material. (Flanged sideboards and hopper, easily attached, transform package conveyor to bulk conveyor). Handles all of your conveying jobs, indoor and outdoor . . . *loading trucks in orchard*, unloading trucks at packing sheds, stacking boxes in fruit storage, handling fertilizer, etc.

TOTE-ALL conveyors come in 14-ft. and 20-ft. lengths—10- and 16-in. belts. Gasoline or electric power. Gasoline power mounting is adjustable to keep engine level at all conveyor positions. With the TOTE-ALL Trail-Hoist one man easily moves conveyor from job to job. Delivery end of conveyor easily adjustable with hydraulic lifting device.

TOTE-ALLS save you *time, money* and *equipment* . . . makes the work easier for your men, increases their efficiency. Handles crates, boxes and all kinds of packaged fruits—reduces the danger of bruised fruit . . . Get details today—wire, write or phone. Ask for Bulletin AFG.

Photo above shows—TOTE-ALL Conveyor mounted on Trail-Hoist with special tongue for fastening conveyor to truck for orchard and field use.

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310 S. Michigan Avenue Chicago 4, Illinois
Telephone Harrison 6035

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Rapids-Standard Co., Grand Rapids, Mich.

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Colson Co., Elyria, Ohio.
Lewis-Shepard Co., Watertown, Mass.
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Service Caster & Truck Co., Albion, Mich.
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Fruit & Produce Packing, Inc., Indianapolis, Ind.
Fruit Packing Equipment Co., Swoope, Va.
Niagara Sprayer & Chemical Co., Inc., Middleport, N.Y.
Trescott Co., Inc., Fairport, N.Y.
Rice Trew & Rice Co., Inc., Biglerville, Pa.
Tyson Orchard Service, Flora Dale, Pa.

Washers, Fruit

John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Brogdex Co., Pomona, Calif.
Food Machinery Corp., Riverside, Calif.
Ideal Grader & Nursery Co., Hood River, Ore.
Parma Water Lifter Co., Parma, Idaho
Tyson Orchard Service, Flora Dale, Pa.
Wayland Machinery Co., Covesville, Va.

Washing Compounds, Fruit

American Cyanamid & Chemical Corp., Insecticide Dept., New York, N.Y.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
General Chemical Co., New York, N.Y.
Los Angeles Soap Co., Los Angeles, Calif.
Mallinckrodt Chemical Works, St. Louis, Mo.
Monsanto Chemical Co., St. Louis, Mo.
Philadelphia Quartz Co., Philadelphia, Pa.
Tennessee Eastman Corp., Kingsport, Tenn.

Wax

Brogdex Co., Pomona, Calif.
Dow Chemical Co., Midland, Mich.
Food Machinery Corp., Riverside, Calif.
Wilbur White Div., Franklin Research Co., Philadelphia, Pa.

ORCHARD INSTRUMENTS

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Bristol Co., Waterbury, Conn.
Fleischhauer, Fr., & Son, Hollis, N.Y.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Co., Rochester, N.Y.

Hydrometers

Eimer & Amend, New York, N.Y.
Fleischhauer, Fr., & Son, Hollis, N.Y.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
E. W. Schultheis, Brooklyn, N.Y.
Taylor Instrument Co., Rochester, N.Y.
Tyson Orchard Service, Flora Dale, Pa.

Hygrometers

Bristol Co., Waterbury, Conn.
Eimer & Amend, New York, N.Y.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Taylor Instrument Co., Rochester, N.Y.
Tyson Orchard Service, Flora Dale, Pa.

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American Optical Co., Scientific Instrument Div., Buffalo, N.Y.
American Optical Co., Southbridge, Mass.
Bausch & Lomb Optical Co., Rochester, N.Y.
Tyson Orchard Service, Flora Dale, Pa.
Carl Zeiss, Inc., New York, N.Y.

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Eimer & Amend, New York, N.Y.
Carl Zeiss, Inc., New York, N.Y.

Thermometers

Bristol Co., Waterbury, Conn.
Eimer & Amend, New York, N.Y.
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C. J. Tagliabue Div., Portable Products Corp., Brooklyn, N.Y.
Taylor Instrument Co., Rochester, N.Y.

TRESCOTT GRADERS AND CLEANERS FOR LARGE AND SMALL GROWERS

TRESCOTT malleable iron sizing belts can be obtained in a wide range of sizes. These belts last a lifetime.

THE TRESCOTT COMPANY, Inc., Fairport, New York

We have both large and small capacity machines which handle either apples or peaches or combination machines for both fruits.

THE STANDARD FOR 38 YEARS

Known for accuracy, capacity and dependability. Models from 400 bushels per day to 6000 bushels per day for both peaches and apples.

Also sweet potato, vegetable graders, washers, dryers; potato graders, conveyors, loaders; peach and apple sizing, cleaning and grading equipment from one to six cars per day. Most models of all equipment available for this season.

Write for prices and literature

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Carrier Corp., Syracuse, N.Y.
Clarage Fan Co., Kalamazoo, Mich.
Frick Company, Waynesboro, Pa.
Frigidaire Div., General Motors Corp., Dayton, Ohio
General Electric Co., Bloomfield, N.J.
Ilg Electric Ventilating Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Nash-Kelvinator Corp., Detroit, Mich.
Niagara Blower Co., Buffalo, N.Y.
Northern Blower Co., Cleveland, Ohio
Western Blower Co., Seattle, Wash.
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FOR
Controlled Atmosphere (Gas) STORAGE OF APPLES.

Designed by experts in pomology and successfully used in New York State

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John Bean Mfg. Co., Lansing, Mich.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Food Machinery Corp., Riverside, Calif.
"Friend" Mfg. Co., Gasport, N.Y.
Link-Belt Co., Chicago, Ill.
Mathews Conveyer Co., Ellwood City, Pa.
Rapids-Standard Co., Grand Rapids, Mich.
Standard Conveyor Co., N. St. Paul, Minn.
Trescott Co., Inc., Fairport, N.Y.

Power

King-Wyse Inc., Archbold, Ohio
Materials Movement Industries, Chicago, Ill.
Mathews Conveyer Co., Ellwood City, Pa.
Rapids-Standard Co., Grand Rapids, Mich.
Standard Conveyor Co., N. St. Paul, Minn.
Trescott Co., Inc., Fairport, N.Y.

Doors

Craine, Inc., Norwich, N.Y.
Bernard Gloekler Co., Pittsburgh, Pa.
Harris Ice Machine Works, Portland, Ore.
Jamison Cold Storage Door Co., Hagerstown, Md.
National Refrigerator Co., St. Louis, Mo.
York Corp., York, Pa.

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Carrier Corp., Syracuse, N.Y.
Frick Company, Waynesboro, Pa.
Frigidaire Div., General Motors Corp., Dayton, Ohio
General Electric Co., Bloomfield,, N.J.
Ilg Electric Ventilating Co., Chicago, Ill.
Westinghouse Electric & Mfg. Co., E. Springfield, Mass.
Worthington Pump & Machinery Corp., Harrison, N.J.

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Armstrong Cork Co., Lancaster, Pa.
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
Bird & Son, E. Walpole, Mass.
Philip Carey Co., Lockland, Ohio
The Celotex Corp., Chicago, Ill.
Cork Insulation Co., Inc., New York, N.Y.
Cork Import Corp., New York, N.Y.
Craine, Inc., Norwich, N.Y.
Insulite Co., Minneapolis, Minn.
Johns-Manville Corp., New York, N. Y.
Kalamazoo Tank & Silo Co., Kalamazoo, Mich.
Kimberly-Clark Corp., Neenah, Wis.
Masonite Corp., Chicago, Ill.
Owens-Illinois Glass Co., Toledo, Ohio
Pacific Lumber Co., San Francisco, Calif.
Reflect-O, Inc., Chicago, Ill.
Ruberoid Co., New York, N.Y.
Servicised Products Corp., Chicago, Ill.
Sisalkraft Co., Chicago, Ill.
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United States Gypsum Co., Chicago, Ill.
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Wood Conversion Co., St. Paul, Minn.

Frick Refrigeration maintains desired temperature and humidity in the air conditioned fruit storage of Stanley Fulton at Hancock, Md.—among many others—and does it with satisfaction and dependability. Let us quote on that fruit storage—or quick-freezer—you have in mind. Write for bulletins, mentioning the cooling work you wish to do.
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PATENTED

Assures maximum insulation efficiency at minimum cost. Moisture-resistant, compact, light weight, sanitary, structurally strong, flexible.

Write for particulars.

Literature on request

UNITED CORK COMPANIES
WEST KEARNY, N. J.

YOU CAN SOLVE MARKETING PROBLEMS
By Building an Insulated Cold Storage

Cold storage facilities will permit you to hold your fruit crops at top quality and to obtain the highest market prices.

Armstrong offers a complete line of efficient low-temperature insulations for use in the construction of fruit storages as well as practical engineering assistance.

SEND FOR FREE BOOKLET— "Armstrong's Insulations for Fruit and Vegetable Storages" will give you helpful information and standards for insulating fruit storages. To get your copy and for complete physical data about Armstrong's low-temperature insulations, write Armstrong Cork Co., Building Materials Div., 9500 Concord St., Lancaster, Pa.

ARMSTRONG CORK COMPANY

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Baker Ice Machine Co., Inc., Omaha, Nebr.
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Carrier Corp., Syracuse, N.Y.
Curtis Refrigerating Machine Co., St. Louis, Mo.
De LaVergne Engine Co., Inc., Philadelphia, Pa.
Diceler Div. General Machine & Mfg. Co., Berwick, Pa.
Frick Company, Waynesboro, Pa.
Frigidaire Div., General Motors Corp., Dayton, Ohio
General Electric Co., Bloomfield, N.J.
Harris Ice Machine Works, Portland, Ore.
Howe Ice Machine Co., Chicago, Ill.
International Harvester Co., Chicago, Ill.
Kelvinator Div., Nash-Kelvinator Corp., Detroit, Mich.
Norge Corp., Detroit, Mich.
Servel, Inc., Evansville, Ind.
Vilter Mfg. Co., Milwaukee, Wis.
Westinghouse Electric & Mfg. Co., E. Springfield, Mass.
Worthington Pump & Machinery Corp., Harrison, N.J.
Yates-American Machine Co., General Refrigeration Div., Beloit, Wis.
York Corp., York, Pa.

STORAGES

Refrigeration and Storage

City Ice & Fuel Co., Chicago, Ill.
Merchants Refrigerating Co., New York, N. Y.

Thermometers

Braun-Knecht-Heimann Co., San Francisco, Calif.
Bristol Co., Waterbury, Conn.
Eimer & Amend, New York, N.Y.
Fleischhauer, Fr., & Son, Hollis, N.Y.
H-B Instrument Co., Philadelphia, Pa.
Taylor Instrument Co., Rochester, N. Y.

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Baker Ice Machine Co., Inc., Omaha, Nebr.
Bristol Co., Waterbury, Conn.
Carrier Corp., Syracuse, N.Y.
Frick Company, Waynesboro, Pa.
General Electric Co., Schenectady, N.Y.
H-B Instrument Co., Inc., Philadelphia, Pa.
Powers Regulator Co., Chicago, Ill.
Taylor Instrument Co., Rochester, N.Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Ventilators

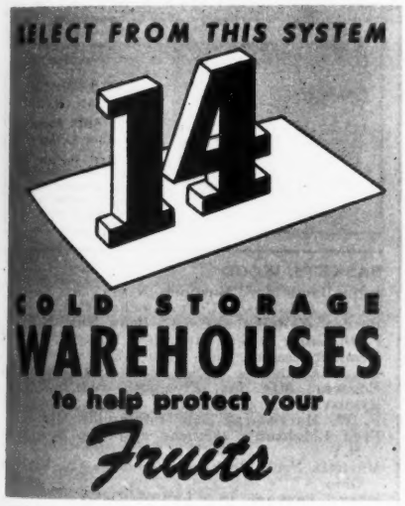
Craine, Inc., Norwich, N.Y.
Ilg Electric Ventilating Co., Chicago, Ill.
James Mfg. Co., Ft. Atkinson, Wis.
Louden Machinery Co., Fairfield, Iowa

Waterproofing Compounds

Bird & Son, Inc., E. Walpole, Mass.
Philip Carey Mfg. Co., Cincinnati, Ohio
Celotex Corp., Chicago, Ill.
Ceresit Waterproofing Corp., Chicago, Ill.
Flintkote Co., New York, N. Y.
Johns-Manville Corp., New York, N. Y.
Koppers Products Co., Pittsburgh, Pa.

Wood Preserving

Fred Alper Industries, Inc., Philadelphia, Pa.
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
Cuprinol, Inc., Boston, Mass.
Tyson Orchard Service, Flora Dale, Pa.



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NATIONAL STOCK YARDS, ILL. North American Cold Storage
ST. LOUIS, MO. Federal Cold Storage Co.
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KANSAS CITY, KANS. Federal Cold Storage Co.
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GALVESTON, TEXAS Galveston Ice & Cold Storage Co.
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Knickerbocker Stamping Co., Parkersburg, W. Va.
Master Refrigerated Locker Systems, Inc. Sioux City, Iowa
McGrew Machine Co., Lincoln, Nebr.
Midwest Metal Stamping Co., Kellogg, Iowa
C. F. Mohr Associates, Aurora, Ill.
Safe Way Food Locker Co., Chicago, Ill.
Tyler Fixture Corp., Niles, Mich.

Paper Containers For Frozen Fruits

Benj. C. Betner Co., Devon, Pa.
Container Corp. of America, Chicago, Ill.
Dixie-Cup Co., Easton, Pa.
Interstate Folding Box Co., Middletown, Ohio
Lily-Tulip Cup Corp., New York, N.Y.
Lindley Box & Paper Co., Marion, Ind.
Moist-R-Proof Container Co., San Francisco, Calif.
Thomas M. Royal, Philadelphia, Pa.
Sealright Co., Inc., Fulton, N. Y.
Sutherland Paper Co., Kalamazoo, Mich.
E. W. Twitchell, Inc., Philadelphia, Pa.

Locker Storage Paper

Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
A. E. MacAdam & Co., Brooklyn, N.Y.
Nekoosa Edwards Paper Co., Port Edwards, Wis.
Rhinelander Paper Co., Rhinelander, Wis.
H. P. Smith Paper Co., Chicago, Ill.

FROST PROTECTION

Engines

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Briggs & Stratton Corp., Milwaukee, Wis.
Caterpillar Tractor Co., Peoria, Ill.
Continental Motors Corp., Muskegon, Mich.
John Deere, Moline, Ill.
Fairbanks, Morse & Co., Chicago, Ill.
Frick Co., Inc., Waynesboro, Pa.
Hercules Motor Co., Canton, Ohio
International Harvester Co., Chicago, Ill.
Waukesha Motor Co., Waukesha, Wis.
Wisconsin Motor Corp., Milwaukee, Wis.
Witte Engine Works, Div. of Oil Well Supply Co., U. S. Steel Corp., Kansas City, Mo.

Indicators, Frost Alarm

Taylor Instrument Co., Rochester, N.Y.
Thwing Instrument Co., Philadelphia, Pa.

Orchard Heaters

American Can Co., New York, N.Y.
Anderson Incinerator Works, Chicago, Ill.
California Orchard Heater Co., Pomona, Calif.
"Friend" Mfg. Co., Gasport, N.Y.
National-Riverside Co., Riverside, Calif.
Scheu Products Co., Ltd., Upland, Calif.

Wind Machines

Conveyor Co., Inc., Huntington Park, Calif.
"Friend" Mfg. Co., Gasport, N.Y.
National Frost Protection Co., Inc., Glendale, Calif.
Towt Co., Glendale, Calif.

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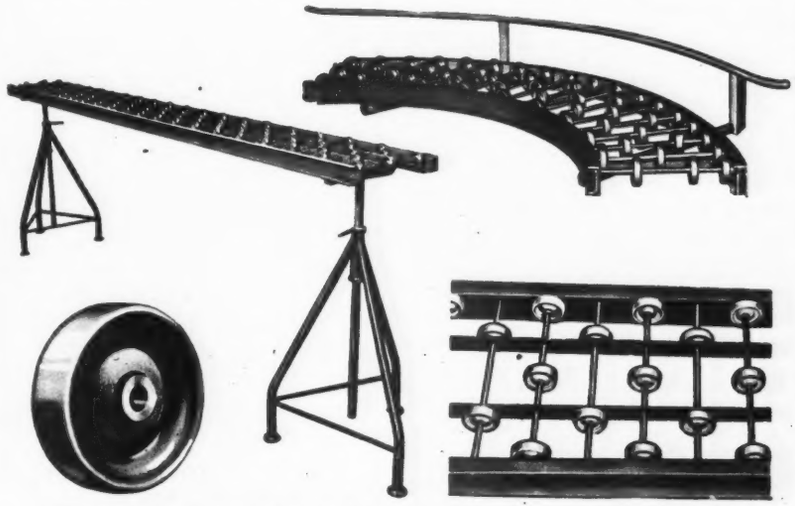

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Cans

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Continental Can Co., Inc., New York, N.Y.
National Can Co., Inc., New York, N.Y.
Thompson Can Co., Dallas, Texas

Clarifying Agents

American Colloid Co., Chicago, Ill.
Johns-Manville Corp., New York, N. Y.
Scientific Filter Co., New York, N.Y.
Wyodak Chemical Co., Cleveland, Ohio

Cookers, Apple Butter

Brighton Copper Works, Cincinnati, Ohio
Bucyrus Copper Kettle Works Co., Bucyrus, Ohio
A. B. Farquhar Co., York, Pa.
Hamilton Copper and Brass Works, Hamilton, Ohio
F. H. Langsenkamp Co., Indianapolis, Ind.

Corers

Barr Bros. Co., Oakland, Calif.
Boutell Mfg. Co., Rochester, N.Y.
Burns Mfg. Co., Syracuse, N.Y.
Food Machinery Corp., Sprague-Sells Div. Hoopeston, Ill.
F. B. Pease Co., Rochester, N.Y.
Rollman Mfg. Co., Mt. Joy, Pa.
Urschel Laboratories, Inc., Valparaiso, Ind.
Zastrow Machine Co., Baltimore, Md.

Fruit Jars

Ball Brothers Co., Muncie, Ind.
Hazel-Atlas Glass Co., Wheeling, W.Va.
Kerr Glass Mfg. Corp., Sand Springs, Okla.
Libbey Glass Div., Owens-Illinois Glass Co., Toledo, Ohio

Pectin

California Fruit Growers Exchange, Products Dept., Ontario, Calif.
General Foods Sales Co., New York, N.Y.
Pen-Jel Corp., Kansas City, Mo.

Peelers

Boutell Mfg. Co., Rochester, N.Y.
Burns Mfg. Co., Syracuse, N.Y.
Food Machinery Corp., Sprague-Sells Div. Hoopeston, Ill.
Sanitary Food Processing Co., Seattle, Wash.

Pomace Pickers

A. B. Farquhar Co., York, Pa.

Pulpers

Enterprise Mfg. Co., Philadelphia, Pa.
A. B. Farquhar Co., York, Pa.
Food Machinery Corp., Anderson-Barngrover Div., San Jose, Calif.
F. H. Langsenkamp Co., Indianapolis, Ind.

Sealers

Food Machinery Corp., Anderson-Barngrover Div., San Jose, Calif.
National Can Co., Inc., New York, N.Y.
National Pressure Cooker Co., Eau Claire, Wis.

Slicers

Boutell Mfg. Co., Rochester, N.Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Food Machinery Corp., Anderson-Barngrover, Div., San Jose, Calif.
Killefir Mfg. Co., Los Angeles, Calif.
F. B. Pease Co., Rochester, N.Y.
Rollman Mfg. Co., Mt. Joy, Pa.
Urschel Laboratories, Inc., Valparaiso, Ind.

Stoners, Cherry

Atlas Tool & Machine Co., Boston, Mass.
Bean-Cutler Div., F.M.C., San Jose, Calif.
Dunkley Co., Kalamazoo, Mich.
Enterprise Mfg. Co., Philadelphia, Pa.
Huntley Mfg. Co., Brocton, N. Y.
New Standard Corp., Mt. Joy, Pa.
Rollman Mfg. Co., Mt. Joy, Pa.

Stoners, Peach

Barr Bros. Co., Oakland, Calif.
Dunkley Co., Kalamazoo, Mich.
Rollman Mfg. Co., Mt. Joy, Pa.

Sulphur Dioxide

E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
Virginia Smelting Co., West Norfolk, Va.

DEHYDRATING

Bleaching Materials

National Sulphur Co., Inc., New York, N.Y.
Philipp Bros., Inc., New York, N.Y.
Stauffer Chemical Co., New York, N.Y.
Virginia Smelting Co., West Norfolk, Va.

Dehydrators

Boutell Mfg. Co., Rochester, N. Y.
J. P. Devine Mfg. Co., Mt. Vernon, Ill.
L. N. Miller Dehydrating Co., Eugene, Ore.
Moore Dry Kiln Co., No. Portland, Ore.
Proctor & Schwartz, Inc., Philadelphia, Pa.

Evaporators

Buffalo Foundry & Machine Co., Buffalo, N.Y.
Arthur Harris Co., Chicago, Ill.
Pfaudler Co., Rochester, N.Y.

JUICE EXTRACTING

Caps and Closures

Armstrong Cork Co., Lancaster, Pa.
Ball Bros. Co., Muncie, Ind.
Crown Cork & Seal Co., Baltimore, Md.
Cupples Co., St. Louis, Mo.
Hazel-Atlas Glass Co., Wheeling, W.Va.
Kerr Glass Mfg. Corp., Sand Springs, Okla.
Owens-Illinois Glass Co., Toledo, Ohio
Phoenix Metal Cap Co., Chicago, Ill.

Extractors, Juice

Burns Mfg. Co., Syracuse, N.Y.
Enterprise Mfg. Co., Philadelphia, Pa.
L. O. Koven & Bro., Inc., Jersey City, N.J.
F. H. Langsenkamp Co., Indianapolis, Ind.
New Standard Corp., Mt. Joy, Pa.

Filters, Fruit Juice

Cuno Engineering Co., Meriden, Conn.
Food Machinery Corp., Anderson-Barngrover Div., San Jose, Calif.
Johns-Manville Corp., New York, N. Y.
Palmer Cider Supplies, Inc., Cos Cob, Conn.
Republic Filters, Inc., New York, N.Y.
Scientific Filter Co., New York, N.Y.

Graters

A. B. Farquhar Co., York, Pa.
Hamilton Metal Products Co., Hamilton, Ohio
New Jersey Agricultural Works, Trenton, N.J.
Palmer Cider Supplies, Inc., Cos Cob, Conn.
Thomas-Albright Co., Goshen, Ind.

Grinders

A. B. Farquhar Co., York, Pa.
Food Machinery Corp., Anderson-Barngrover Div., San Jose, Calif.
New Jersey Agricultural Works, Trenton, N.J.
Palmer Cider Supplies, Inc., Cos Cob, Conn.
Papec Machine Co., Shortsville, N.Y.
J. B. Sedberry, Inc., Utica, N.Y.
Thomas-Albright Co., Goshen, Ind.

Presses, Fruit

Cutaway Harrow Co., Higganum, Conn.
Enterprise Mfg. Co., Philadelphia, Pa.
A. B. Farquhar Co., York, Pa.
Food Machinery Corp., Anderson-Barngrover Div., San Jose, Calif.
New Jersey Agricultural Works, Trenton, N.J.
Palmer Cider Supplies, Inc., Cos Cob, Conn.
Thomas-Albright Co., Goshen, Ind.

Racks and Strainers, Fruit Juice

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New Jersey Agricultural Works, Trenton, N.J.
Palmer Cider Supplies, Inc., Cos Cob, Conn.
Thomas-Albright Co., Goshen, Ind.

Sodium Benzoate

Carus Chemical Co., Inc., La Salle, Ill.
Dow Chemical Co., Midland, Mich.
Heyden Chemical Corp., New York, N.Y.
Mallinckrodt Chemical Works, St. Louis, Mo.
Monsanto Chemical Co., St. Louis, Mo.
Philipp Bros. Inc., New York, N.Y.
Seydel Chemical Co., Jersey City, N.J.

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Full directions with each package.

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Berryville Basket Co., Inc., Berryville, Va.
F. D. Croce & Co., Inc., New York, N. Y.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Hinde & Dauch Paper Co., Sandusky, Ohio
Rice, Trew & Rice Co., Inc., Biglerville, Pa.
Simplex Paper Corp., Adrian, Mich.
Tyson Orchard Service, Flora Dale, Pa.
Webster Basket Co., Webster, N.Y.

Cellophane

Brooks Paper Co., St. Louis, Mo.
E. I. du Pont de Nemours & Co., Inc., "Cellophane" Div., Wilmington, Del.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Sylvania Industrial Corp., New York, N.Y.

Containers

BAGS, CLOTH, OPEN MESH, PAPER

Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chagrin Falls, Ohio
Fulton Bag & Cotton Mills, Atlanta, Ga.

BASKETS, CORRUGATED, FIBERBOARD, PAPERBOARD

American Box Board Co., Grand Rapids, Mich.
Ashtabula Corrugated Box Co., Ashtabula, Ohio
Container Corp. of America, Chicago, Ill.
F. D. Croce & Co., Inc., New York, N. Y.
Fibreboard Products Inc., San Francisco, Calif.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Gaylord Container Corp., Atlanta, Ga.
Hankins Container Co., Cleveland, Ohio
Kieckhefer Container Co., Delair, N.J.
Maryland Container Co., Baltimore, Md.
Ohio Boxboard Co., Rittman, Ohio
Pioneer Paper Stock Co., Chicago, Ill.
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Edgerton Mfg. Co., Plymouth, Ind.
Evansville Basket & Crate Co., Evansville, Ind.
F. W. Harrison & Son, Painesville, Ohio
Fred Leighton's Mexican Imports, New York, N.Y.
Marietta Fruit Package & Lumber Co., Marietta, Ohio
Marvil Package Co., Laurel, Del.
Paducah Box & Basket Co., Paducah, Ky.
Pierce-Williams Co., South Haven, Mich.
H. L. Rapp & Son, Carpentersville, N.J.
Ripley Box & Basket Co., Inc., Ripley, Tenn.
Roberts-Liggett Co., Metropolis, Ill.
Sodus Basket Co., Sodus, N.Y.
Tyson Orchard Service, Flora Dale, Pa.
Webster Basket Co., Webster, N.Y.

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SODIUM BENZOATE
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Quarter of a Century of Service

Consult Alphabetical Index on Page 29

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Acushnet Saw Mills Co., New Bedford, Mass.
F. D. Croce & Co., Inc., New York, N. Y.
Cummer-Graham Co., Paris, Tex.
General Box Co., Chicago, Ill.
Green Co., Inc., Bellows Falls, Vt.
Marinette & Menominee Box Co., Marinette, Wis.
Maxwell Brothers, Inc., Chicago, Ill.
Mell Lumber Co., Philadelphia, Pa.
New England Box Co., New York, N.Y.
Rathborne, Hair & Ridgway Co., Chicago, Ill.
Smood Box Co., Cleveland, Ohio
Spruce Veneer Package Corp., Puyallup, Wash.

BOXES AND CRATES, BERRY

American Box Board Co., Grand Rapids, Mich.
Ashtabula Corrugated Box Co., Ashtabula, Ohio
Berlin Fruit Box Co., Berlin Heights, Ohio
F. D. Croce & Co., Inc., New York, N. Y.
Cummer-Graham Co., Paris, Tex.
Frank L. Deaner & Son, Benton Harbor, Mich.
Fibre Berry Box Co., Hammond, La.
Fibreboard Products, Inc., San Francisco, Calif.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Robert Gair Co., Inc., New York, N.Y.
General Box Co., Chicago, Ill.
F. W. Harrison & Son, Painesville, Ohio
Inman Mfg. Co., Amsterdam, N.Y.
Marietta Fruit Package & Lumber Co., Marietta, Ohio
Marvil Package Co., Laurel, Del.
New Albany Box & Basket Co., New Albany, Ind.
Ohio Boxboard Co., Rittman, Ohio
Ripley Box & Basket Co., Inc., Ripley, Tenn.
Roberts-Liggett Co., Metropolis, Ill.
Rollrim Box Co., Benton Harbor, Mich.
Spruce Veneer Package Corp., Puyallup, Wash.
Webster Basket Co., Webster, N.Y.

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American Box Board Co., Grand Rapids, Mich.
American Fruit Growers, Inc., Chicago, Ill.
Ashtabula Corrugated Box Co., Ashtabula, Ohio
Baltimore Paper Box Co., Baltimore, Md.
California Container Corp., Emeryville, Calif.
Container Corp. of America, Chicago, Ill.
F. D. Croce & Co., Inc., New York, N. Y.
Evansville Container Co., Evansville, Ind.
Corrugated Container Co., Columbus, Ohio
Fibreboard Products Inc., San Francisco, Calif.
Friday Pack Co., Portland, Ore.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Robert Gair Co., Inc., New York, N.Y.
Gaylord Container Corp., Atlanta, Ga.
Hankins Container Co., Cleveland, Ohio
Hinde & Dauch Paper Co., Sandusky, Ohio
Iowa Fiber Box Co., Keokuk, Iowa.
Martin Brothers Box Co., Aurora, Ind.
Maryland Container Co., Baltimore, Md.
Ohio Boxboard Co., Rittman, Ohio
Pioneer Paper Stock Co., Chicago, Ill.
B. G. Pratt Co., Hackensack, N. J.
Rollrim Box Co., Benton Harbor, Mich.
Simplex Paper Corp., Adrian, Mich.
Fred C. Strype, New York, N.Y.
Traub Container Corp., Cleveland, Ohio

BOXES AND CRATES, WOOD

John Bacon Co., Gasport, N.Y.
Barden & Robeson Corp., Lockport, N.Y.
California Barrel Co., Ltd., Los Angeles, Calif.
F. D. Croce & Co., Inc., New York, N. Y.
H. A. Du Bois & Sons, Inc., Cobden, Ill.
Evansville Container Co., Evansville, Ind.
General Box Co., Chicago, Ill.
Green Co., Bellows Falls, Vt.
F. W. Harrison & Son, Painesville, Ohio
Mell Lumber Co., Philadelphia, Pa.
T. R. Miller Mill Co., Inc., Brewton, Ala.
New Albany Box & Basket Co., New Albany, Ind.
New England Box Co., New York, N.Y.
Rathborne, Hair & Ridgway Co., Chicago, Ill.
Smood Box Co., Cleveland, Ohio
Sodus Basket Co., Sodus, N.Y.
Southern Crate & Veneer Co., Macon, Ga.
Spruce Veneer Package Corp., Puyallup, Wash.
Traub Container Corp., Cleveland, Ohio

CARTONS, CONSUMER

American Box Board Co., Grand Rapids, Mich.
California Container Corp., Emeryville, Calif.
Fibreboard Products, Inc., San Francisco, Calif.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Friday Pack Co., Portland, Ore.
Robert Gair Co., Inc., New York, N.Y.
Maryland Container Co., Baltimore, Md.
Sutherland Paper Co., Kalamazoo, Mich.

Cushions

John Bacon Co., Gasport, N.Y.
Continental Paper Products Co., Denver, Colo.
F. D. Croce & Co., Inc., New York, N.Y.
Edgerton Mfg. Co., Plymouth, Ind.
Arthur A. Erny Co., St. Paul, Minn.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Georgia Cushion & Wrapper Co., Inc., Woodland, Ga.
Hinde & Dauch Paper Co., Sandusky, Ohio
Kimberly-Clark Corp., Neenah, Wis.
Rice, Trew & Rice Co., Inc., Biglerville, Pa.
Simplex Paper Corp., Adrian, Mich.
Fred C. Strype, New York, N.Y.
Sutherland Paper Co., Kalamazoo, Mich.
Tyson Orchard Service, Flora Dale, Pa.

Fringes

Continental Paper Products Co., Denver, Colo.
Arthur A. Erny Co., St. Paul, Minn.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Georgia Cushion & Wrapper Co., Woodland, Ga.
Pioneer Paper Stock Co., Chicago, Ill.
Rice, Trew & Rice Co., Inc., Biglerville, Pa.
Simplex Paper Corp., Adrian, Mich.
Sutherland Paper Co., Kalamazoo, Mich.

Labels

American Colortype Co., Chicago, Ill.
Bartlett Label Co., Kalamazoo, Mich.
Brandau-Caig-Dickerson Co., Nashville, Tenn.
Calvert Lithographing Co., Detroit, Mich.
F. D. Croce & Co., Inc., New York, N.Y.
Dennison Mfg. Co., Framingham, Mass.
Epsen Lithographing Co., Omaha, Nebr.
Federal Container Co., Philadelphia, Pa.
Fibreboard Products, Inc., San Francisco, Calif.
Gamse Lithographing Co., Inc., Baltimore, Md.
Lehman Printing & Litho. Co., San Francisco, Calif.
Maryland Container Co., Baltimore, Md.
Milprint Inc., Milwaukee, Wis.
A. B. Morse Co., St. Joseph, Mich.
Schmidt-Lithograph Co., San Francisco, Calif.
Tyson Orchard Service, Flora Dale, Pa.
United States Printing & Lithograph Co., Cincinnati, Ohio
Waddell Printing Co., La Grange, Ind.

Liners

John Bacon Co., Gasport, N.Y.
Berryville Basket Co., Inc., Berryville, Va.
Continental Paper Products Co., Denver, Colo.
Frank L. Deaner & Son, Benton Harbor, Mich.
Edgerton Mfg. Co., Plymouth, Ind.
Arthur A. Erny Co., St. Paul, Minn.
Evansville Container Co., Evansville, Ind.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Georgia Cushion & Wrapper Co., Woodland, Ga.
Kimberly-Clark Corp., Neenah, Wis.
New Albany Box & Basket Co., New Albany, Ind.
Pioneer Paper Stock Co., Chicago, Ill.
Reynolds Metals Co., Richmond, Va.
Rice, Trew & Rice Co., Inc., Biglerville, Pa.
Simplex Paper Corp., Adrian, Mich.
Fred C. Strype, New York, N.Y.
Sutherland Paper Co., Kalamazoo, Mich.
Tyson Orchard Service, Flora Dale, Pa.

Pads

John Bacon Co., Gasport, N.Y.
California Container Corp., Emeryville, Calif.
Continental Paper Products Co., Denver, Colo.
Frank L. Deaner & Son, Benton Harbor, Mich.
Fibreboard Products Inc., San Francisco, Calif.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Georgia Cushion & Wrapper Co., Woodland, Ga.
Hinde & Dauch Paper Co., Sandusky, Ohio
Kimberly-Clark Corp., Neenah, Wis.
New Albany Box & Basket Co., New Albany, Ind.
Rice, Trew & Rice Co., Inc., Biglerville, Pa.
Fred C. Strype, New York, N.Y.
Tyson Orchard Service, Flora Dale, Pa.

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Diamond-T-Waxed Paper Corp., Chicago, Ill.
E. I. du Pont de Nemours & Co., Inc., "Cellophane" Div., Wilmington, Del.
Fruit & Produce Packing, Inc., Indianapolis, Ind.
Newark Parrafine & Parchment Paper Co., Newark, N.J.
Rice, Trew & Rice Co., Inc., Biglerville, Pa.
Simplex Paper Corp., Adrian, Mich.
Fred C. Strype, New York, N.Y.
Sylvania Industrial Corp., New York, N.Y.
Tyson Orchard Service, Flora Dale, Pa.
Webster Basket Co., Webster, N.Y.

Paste

Clark-Stek-O Corp., Rochester, N.Y.
Arabol Mfg. Co., New York, N.Y.

Stamping Inks and Pads

Jas. H. Matthews & Co., Pittsburgh, Pa.
Rivet-O Mfg. Co., Orange, Mass.
Stampit Co., Memphis, Tenn.

Stamps, Rubber

Jas. H. Matthews & Co., Pittsburgh, Pa.
J. L. May Co., New York, N.Y.
Rivet-O Mfg. Co., Orange, Mass.
Taylor Bros. Co., Cleveland, Ohio
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Wrappers

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Fruit & Produce Packing, Inc., Indianapolis, Ind.
Pioneer Paper Stock Co., Chicago, Ill.
Simplex Paper Corp., Adrian, Mich.
Fred C. Strype, New York, N.Y.
Tyson Orchard Service, Flora Dale, Pa.
United Paper Co., Tampa, Fla.

PLAIN

Fruit & Produce Packing, Inc., Indianapolis, Ind.
Newark Parrafine & Parchment Paper Co., Newark, N.J.
Tyson Orchard Service, Flora Dale, Pa.
United Paper Co., Tampa, Fla.
Wolf River Paper & Fiber Co., Shawano, Wis.

TRANSPARENT

Brooks Paper Co., St. Louis, Mo.
Celluloid Corp., New York, N.Y.
E. I. du Pont de Nemours & Co., Inc., "Cellophane" Div., Wilmington, Del.
Eastman Kodak Co., Rochester, N.Y.
Firestone Tire & Rubber Co., Akron, Ohio
B. F. Goodrich Co., Akron, Ohio
Goodyear Tire & Rubber Co., Akron, Ohio
Thomas M Royal & Co., Philadelphia, Pa.
Fred C. Strype, New York, N.Y.
Sylvania Industrial Corp., New York, N.Y.
Traver Corp., Chicago, Ill.

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(Continued from page 60)

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From where I sit ... *by* Joe Marsh

Mat Fisher versus Ed's big toe

Mat Fisher's our local weather man . . . and planning for the picnic of our town Improvement Club, Mat persuades us to postpone it until Tuesday — since it's going to rain for three days, starting Saturday the 8th.

Only one dissenting is Ed Whortle, who claims he can feel rain in his big toe—and there isn't a drop in prospect for at least three days!

Well, it's bright and sunny on the 8th—and 9th—and 10th. But come the day of the picnic, it pours rain like Jupiter Pluvius —and we hold it in Ma Hoskins' parlor, drinking beer and roasting hot dogs in the fireplace.

Of course, Ed razzes Mat no end. But nobody's sore. In fact, they like Mat just a little better, being an expert and being wrong. (And from where I sit, a stormy day indoors before a fire makes a picnic meal taste extra appetizing!)

Joe Marsh

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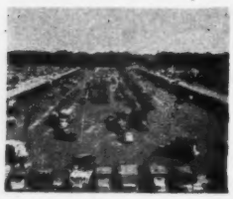

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Quaker State Oil Refining Corp., Oil City, Pa.
Shell Oil Co., Inc., New York, N. Y.
Sinclair Refining Co., New York, N.Y.
Socony-Vacuum Oil Co., Inc., New York, N.Y.
Standard Oil Co., New York, N.Y.
Texas Co., New York, N.Y.
Tide Water Associated Oil Co., New York, N.Y.
Valvoline Oil Co., Cincinnati, Ohio
Wolf's Head Oil Refining Co., New York, N.Y.

Radiator Cleaners

Hygienic Products Co., Canton, Ohio

Tires and Tubes

Firestone Tire & Rubber Co., Akron, Ohio
Fisk Tire Co., New York, N.Y.
General Tire & Rubber Co., Akron, Ohio
Gillette Rubber Co., Eau Claire, Wis.
B. F. Goodrich Co., Akron, Ohio
Goodyear Tire & Rubber Co., Inc., Akron, Ohio
Kelly-Springfield Tire Co., Cumberland, Md.
Lee Rubber & Tire Corp., Conshohocken, Pa.
Pennsylvania Rubber Co., Jeannette, Pa.
Seiberling Rubber Co., Akron, Ohio
United States Rubber Co., New York, N.Y.

Tire Pumps and Accessories

ADAPTERS

Firestone Tire & Rubber Co., Akron, Ohio
Goodyear Tire & Rubber Co., Inc., Akron, Ohio
F. E. Myers & Bro. Co., Ashland, Ohio

AIR COMPRESSORS

Curtis Refrigerating Machine Co., St. Louis, Mo.
DeVilbiss Co., Toledo, Ohio
Gill-Owen Co., Litchfield, Ill.
Tokheim Pump Co., Fort Wayne, Ind.
Willard-Anderson Co., Danville, Ill.

CALCIUM CHLORIDE

American Cyanamid & Chemical Corp., New York, N. Y.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.
Mallinckrodt Chemical Works, St. Louis, Mo.
Merck & Co., Inc., Rahway, N. J.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
Solvay Sales Corp., New York, N.Y.
Stauffer Chemical Co., New York, N. Y.

GAUGES, LOW PRESSURE

Improved Gauge Mfg. Co., Syracuse, N. Y.
Moto Meter Gauge & Equip. Corp, Toledo, Ohio
Pierce, Butler & Pierce Mfg. Corp., New York, N. Y.
A. Schrader's Son Div. Scovill Mfg. Co., Inc., Brooklyn, N. Y.
Service Station Equip. Co., Conshohocken, Pa.

PUMP, AIR

John Deere, Moline, Ill.

Trailers

Ben Hur Trailer Div. Lavine Gear Co., Milwaukee, Wis.
Electric Wheel Co., Quiney, Ill.
Karl Kuemmerling, Canton, Ohio
Mullins Mfg. Co., Salem, Ohio

Railroads

Association of American Railroads, Washington, D.C.
Atchison, Topeka and Santa Fe Railroad System, Chicago, Ill.
Atlantic Coast Line Railroad, Wilmington, N.C.
Baltimore & Ohio Railroad, Baltimore, Md.
Boston and Albany Railroad, Boston, Mass.
Boston & Maine Railroad, Boston, Mass.
Chesapeake & Ohio Railway Co., Cleveland, Ohio
Chicago, Milwaukee, St. Paul & Pacific Railroad, Chicago, Ill.
Chicago, Rock Island & Pacific Railway Co., Chicago, Ill.
Chicago and North Western Railway, Chicago, Ill.
Erie Railroad Co., Cleveland, Ohio
Great Northern Railway Co., St. Paul, Minn.
Illinois Central Railroad Co., Chicago, Ill.
Louisville & Nashville Railroad Co., Louisville, Ky.
New York Central System, New York, N.Y.
Norfolk and Western Railway Co., Roanoke, Va.
Pacific Fruit Express Co., San Francisco, Calif.
Pennsylvania Railroad, Philadelphia, Pa.
Railway Express Agency, Inc., New York, N.Y.
Seaboard Railway, Norfolk, Va.
Union Pacific Railroad, Omaha, Nebr.

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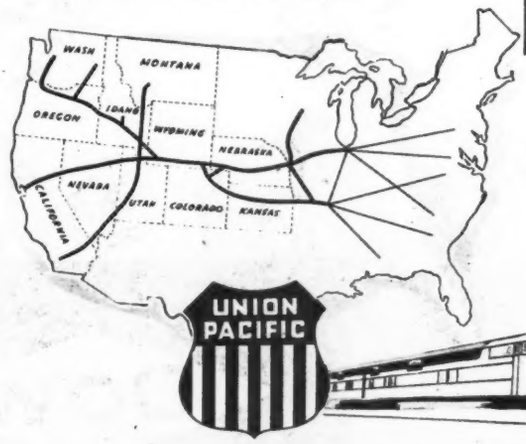

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